Developing the capacity of pharmacists in Jordan: Progress, challenges and opportunities

Submitted by

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International Pharmaceutical Federation (Dusseldorf, Germany)
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Abstract

Pharmacists in Jordan are greatly positioned to play a key role in shaping the future direction of the country's healthcare system, particularly in terms of improving patient and health outcomes. However, the available literature reports a number of problems affecting the Jordanian pharmacy sector across the professional practice, education and regulation spheres; issues which have been hindering the adequate provision of pharmaceutical care services, as well as the overall development of the profession.

This study aims to examine the current status of the pharmacy profession in Jordan, notably in terms of the challenges and opportunities it faces, with a particular focus on the educational sector. To that end, a mixed methods approach was employed in which a series of studies were conducted.

In the first study, semi-structured interviews and focus group sessions were carried out to identify and explore the main challenges facing the profession. Interview transcripts were thematically analysed, with eight principal 'challenge areas' being identified. These results were validated by focus group findings, and tailored recommendations were produced to address each challenge.

In the second study, data from the Official National Register of pharmacists were obtained, collated and analysed, so as to establish workforce trends. Geographical, sectoral and gender distribution imbalances were identified; gaps in the current workforce intelligence were also highlighted and discussed.

The third study employed a set of surveys to collect academic and institutional capacity information from pharmacy schools in Jordan. Surveys were completed using data triangulated from multiple sources (including official documents, schools websites and dean interviews).

In the final study, a secondary qualitative content analysis of the interview transcripts was undertaken to identify gaps in pharmacy graduates' skills and competencies. The Global Competency Framework for pharmacy was used as the starter coding framework. Sixty eight

(68) behaviours from across the Framework's four competency domains were identified by participants as lacking in graduates. As such, this thesis represents the first holistic investigation of the status of the pharmacy profession, workforce and education in Jordan, including the opportunities and challenges faced by the sector. This work's original contribution to knowledge lies not only in the new baseline information produced, but also in the evidence-based guidance and recommendations presented to local stakeholders and researchers.

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List of Abbreviations

B.Sc.	Bachelor of Science
CE	Continuing Education
CPD	Continuing Professional Development
FIP	International Pharmaceutical Federation
FIPEd	FIP Education Initiative
GbCF	Global Competency Framework
HE	Higher Education
HHC	High Health Council
HRH	Human resources for health
HRIS	Human resource information system
JPA	Jordan Pharmaceutical Association
MDG	Millennium Development Goal
MENA	Middle East and North Africa
MoH	Ministry of Health
NCD	Non-communicable Disease
OTC	Over-the-Counter (Medicine)
PFP	Preparedness for practice
PG	Postgraduate
Pharm. D	Doctor of Pharmacy
QA	Quality assurance
RMS	Royal Medical Services
SDG	Sustainable Development Goal
UG	Undergraduate
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNDP	United Nations Development Programme
UNRWA	United Nations Relief and Works Agency
WB	World Bank
WHO	World Health Organisation

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Chapter 1 Introduction: Background, Scope and Context

1.1 Background

1.1.1 Recognising Human Resources for Health (HRH)

Human Resources for Health (HRH) are defined by the World Health Organisation (WHO) as "all people engaged in actions whose primary intent is to enhance health" (World Health Organisation, 2006b). As such, HRH are at the core of any healthcare system (Diallo et al., 2003, Hongoro and McPake, 2004), and their education, training, governance and planning are critical determinants of health outcomes and service delivery. Moreover, improving health outcomes and service delivery is directly dependent on the quality, accessibility and availability of health workers (Anand and Bärnighausen, 2004, Bossert et al., 2007). Accordingly, HRH problems prevent quality healthcare services from being delivered to populations (Dieleman and Hilhorst, 2011). Addressing issues affecting HRH, and strengthening their capacity, should be at the core of any health development process, whether local or global in scope.

Countries of all socio-economic profiles face some form of health workforce challenges, albeit to varying degrees (Narasimhan et al., 2004). Least developed countries, in particular, often confront a number of HRH challenges that can coalesce into crises encompassing severe shortages, distribution and skill imbalances, unsatisfactory work environments and weak knowledge foundations (Chen et al., 2004).

The WHO predicts that emerging health challenges, such as shifting disease patterns, growing populations, and changing economic trends, will lead to the creation of 40 million new healthcare sector jobs by 2030 in high- to middle-income nations; conversely, most low and lower middle-income countries are projected to experience a projected shortage of 18 million health workers (World Health Organisation, 2015b). For many countries, these issues are mostly the result of the lack of appropriate HRH policies (Dussault and Dubois, 2003). Current approaches to HRH problems are mostly reactive, too broad and have limited short-term vision (Dussault and Dubois, 2003). Despite the importance of HRH to the success of health sector

reforms (Kabene et al., 2006), this link remains a neglected area of the debate (Rigoli and Dussault, 2003). Indeed, HRH issues have historically tended to rank low on both national and international health policy agendas (Narasimhan et al., 2004).

In recent years, however, mounting evidence of HRH's impact on improving population health outcomes and strengthening health systems has helped place HRH issues at the top of the global health agenda. This has injected renewed momentum into the international dialogue on HRH, which have now been acknowledged as a key element to the success of international health development goals, such as the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs)(Anand and Bärnighausen, 2004). Indeed, effective human resources management is now widely considered integral to the achievement of health-related Millennium Development Goals (MDGs) (Wyss, 2004). (The MDGs were superseded by a set of 17 SDGs in 2015).

The Global Health Workforce Alliance was set up by the WHO in 2006 with a mission to coordinate international efforts to resolve the HRH crisis, particularly in developing countries, and help achieve the health targets traced by the MDGs. The HRH theme is prominently featured in post-2015 health development frameworks, notably in the United Nations' SDGs. For instance, the projected HRH shortage in developing countries poses serious concerns with regards to meeting the health-related targets of the SDGs, especially when healthcare workers have been identified as essential agents of sustainable development (de Francisco Shapovalova et al., 2015). The WHO drafted a Global HRH Strategy - to be presented to its Executive Body at the 2016 World Health Assembly – that calls for swifter progress towards the SDGs and Universal Health Coverage through ensuring equitable access to a competent health workforce (World Health Organisation, 2016).

The WHO, in partnership with the Organization for Economic Co-operation and Development (OECD) and the International Labour Organization (ILO), has formed a special Commission on Health Employment and Economic Growth, charged with proposing investment plans in health employment to drive SDG benefits (World Health Organisation, 2015b). However, merely

investing in health workers' employment and addressing workforce shortages is not enough to address all HRH issues. Indeed, the quality of the workforce is equally, if not more, important in this regard. Updating educational and training programmes so as to develop the quality of health service delivery is clearly an urgent priority for health systems around the world, especially in developing countries.

In 2010, an independent global commission on the Education of Health Professionals for the 21st Century was launched (Bhutta et al., 2010). The Commission seeks to drive educational reforms and, in the process, produce a generation of health professionals who are better-prepared and equipped to address current and future needs and challenges (Frenk et al., 2010). In 2013, the WHO produced its first guidelines on the topic - presented in a report titled "Transforming and Scaling Up Health Professionals' Education and Training" - that emphasised the importance of scaling-up the health workforce's educational and training systems, not only to increase the size of the workforce but also to ensure the training will adequately meet the population's needs (World Health Organisation, 2013).

1.1.2 Developing HRH: From Theory to Practice

The directions and outcomes of most development projects initiated by local governments and international Non-Governmental Organisations (NGOs) are often guided by Western-European and Northern-American standards. Stemming from conventional development theories, these projects have been criticised for being an attempt to project Western paradigms onto other parts of the world (Pieterse, 2010). For instance, critics of the conventional development theory point out that the theory's approach advocates a universalism that is rooted in holding Western academic, political and economic structures as a universal model for non-Westerners to follow (Rapley, 2004). The United Nations Development Programme (UNDP) rejects this "old model" for being "based on [the] mistaken assumption… that it is possible simply to ignore existing capacities in developing countries and replace them with knowledge and systems produced elsewhere — a form of development as displacement, rather than development as transformation" (2002).

Post-modern views on development also challenge the merits of the universal path – or 'development as Westernization' – that may overlook local cultural and societal characteristics and needs (Pieterse, 2000). Development should instead be needs-centred and use those needs as the primary guiding benchmark for development indicators. Nevertheless, critiques of such universal approaches to development should not be taken to be calls for isolating local development efforts from those in the rest of the world. On the contrary, domestic development and capacity-building must also adapt and respond to global drivers.

Capacity development emerged in the 1980s and is a relatively new paradigm in the development field; though it has since become the primary approach taken by the UN in its projects (Lusthaus et al., 1999), with the UNDP adopting 'capacity is development' as its slogan (United Nations Development Programme, 2010). In other words, outcomes that do not consolidate and strengthen existing capacities suggest weak development efforts. According to the UN's development vision, "if capacity is the means to plan and achieve, then capacity development describes the ways to those means" (United Nations Development Programme, 2009).

For its part, the OECD (2006) defines capacity development as "the process by which individuals, groups and organisations, institutions and countries develop, enhance and organise their systems, resources and knowledge; all reflected in their abilities, individually and collectively, to perform functions, solve problems and achieve objectives". In other words, capacity building is a process by which individuals and institutions become able to identify and meet their own objectives. The success of capacity building thus relies on it being needs-based and context-driven, so as to ensure the sustainability of its outcomes.

Capacity development acknowledges that 'one size does not fit all' and, as such, it favours 'best fit' approaches over 'best practice' ones. Capacity building in this context refers to a multi-level, integrated system of environments, institutions and individuals. While the UNDP states that "capacity development is about transformational processes that drive progress" (2010), building capacity on an individual-level is integral to the success of any institutional transformations.

Furthermore, capacity development is increasingly seen not only as a complement to other developmental concepts, such as sustainable development and human resources development, but as an umbrella concept covering these and other theories of development (Lusthaus et al., 1999).

In development terms, capacity development is arguably inseparable from the human development theory, which argues for an emphasis on investing in human resources and, to that end, stresses the importance of education, health, and populations (Nafukho et al., 2004). For proponents of the theory, investing in education, health and skills is key to achieving economic growth through human development (ul Haq, 1995).Capacity building and sustainable development both argue for a needs-based approach to development. Indeed, one could argue that for capacity building to be successful it must be sustainable. Conversely, only a sustainable developmental approach is likely to produce enhanced capacities at all levels. According to the UN (1987), a 'sustainable' form of development is one that "meets the needs of the present without compromising the ability of future generations to meet their own needs". A sustainable form of development requires current needs to be met, and needs-based development is the best path towards sustainable growth.

In this regard, HRH is the best lens through which to understand and represent the connections linking capacities, human resources, and sustainability development; and HRH development is a prime example of how all three development approaches combine. Health workforce development is a complex process that requires multidisciplinary collaborations across several areas, such as needs analysis, planning, evaluation of programmes, demographics and statistics, and effectiveness of teaching methods. Quality health service delivery depends on sustainably strengthening HRH and their capacities to meet population needs.

1.2 Scope

1.2.1 Needs-based Development in Pharmacy

The pharmacy profession has undergone huge worldwide transformations in recent years. Since its introduction, the concept of pharmaceutical care has largely reshaped the nature of pharmacy practice (Hepler and Strand, 1990). Several global efforts, led jointly by the International Pharmaceutical Federation (FIP) and the WHO, have in response developed practical resources designed to offer a step-by step approach to the 'new' patient-centred practice to be adopted by countries around the world (World Health Organisation, 2006a). This paradigm shift has been accompanied by ongoing efforts aimed at setting and raising the global standards of pharmacy practice (e.g. through the Good Pharmacy Practice guidelines) and pharmacy education (e.g. through the Global Competency Framework) (International Pharmaceutical Federation, 2011, International Pharmaceutical Federation, 2012b). Despite these developments, however, enormous disparities persist in the state of the pharmacy profession among countries, with significant differences between developing and emerging economies, on the one hand, and developed ones, on the other (Anderson, 2002).

In virtually all developed countries, the pharmacy sector has not only progressively shifted from being product-orientated to being patient-orientated but has also been under immense pressure to further expand and advance the role of the pharmacist to meet the needs of modern healthcare systems (Giberson et al., 2011, University College London School of Pharmacy, 2012, McMillan et al., 2014). In less developed contexts, pharmacists' contributions to the healthcare system have been hindered by numerous challenges on numerous fronts, such as pharmaceutical human resource planning, workforce production, education capacity and skill mix, medicines supply and access, and regulation enforcement and law enactment, to name a few (International Pharmaceutical Federation, 2012a, Adunlin et al., 2013, Islam et al., 2014, Wafula et al., 2014). Despite these challenges, however, there have been widespread evidence-based research efforts to recognise and identify the context-specific changes needed to shift the state of the profession and improve current practice models (Malik and Hussain, 2014, Lim et al., 2012, Ahmad et al., 2014, Fang et al., 2013).

In the pharmaceutical sector, HRH capacity building is geared towards developing and sustaining a sufficient supply of a competent workforce prepared to provide high quality pharmaceutical care. Since its establishment in 1912, the FIP has acted as a global convener of efforts to highlight and champion the role of the pharmacy profession (Thorburn Burns and Deelstra, 2012). As the largest global body representing pharmacy and the pharmaceutical sciences, the FIP works "to support the development of the pharmacy profession… in order to meet the world's healthcare needs and expectations" (International Pharmaceutical Federation, 2016b).

Launched in 2007, the FIP's Education Initiative (FIPEd, formerly the Pharmacy Education Taskforce) has galvanised and organised efforts around a number of goals for developing pharmacy education around the world. The outcome of a collaborative effort between the FIP, WHO and UNESCO, FIPEd has recognised the importance of the educational system as a key prerequisite to creating a fully competent and efficient pharmacy workforce. In this regard, the FIPEd has devoted particular attention to the inherent variations in healthcare demands - both in terms of diversity and complexity - that arise across different contexts, geographic or otherwise. FIPEd views the 'one size fits all' as an impractical educational model (Anderson et al., 2010) and has been actively calling for and supporting a 'needs-based education' approach (See Figure 1.1) according to which the needs of the local health services and labour market to be assessed and determined first, before being used in the planning and implementation of a supportive and complementing educational system (Anderson et al., 2010, Anderson et al., 2009b).



Figure 1.1 A needs-based professional educational model, FIP-WHO-UNESCO Pharmacy Education Taskforce.
Redrawn with permission (Anderson et al., 2010).

In this context, country-specific case studies can not only help determine how such a complex task can be conducted to the benefit of local actors, but also inform global efforts in pharmacy educational development. While each country's context is unique, much can be learnt from aggregating evidence from case studies. More broadly, comparative research (of which country case studies are a vital component,) advocates the study of different countries and cultures in order to help "reflect on our context", thereby serving the international developmental arena (McGrath, 2010).

Without such country case studies, developing 'needs-based' education would be a primarily theoretical pursuit, with little insight into how this model can be practically integrated into pre-existing traditional academic environments that may not be particularly welcoming to the notion of an outcomes-based approach (Anderson et al., 2012). In light of this, FIPEd has initiated several pharmacy education country-wide case studies aimed at identifying local challenges and solutions, developing and evaluating relevant tools, facilitating capacity and quality

improvements, as well as providing insights into stakeholder engagement. In particular, notable research efforts have been initiated in a number of African nations, including Nigeria, Ethiopia, Malawi, Zambia, Ghana, Uganda, Tanzania and Kenya (International Pharmaceutical Federation, 2016a); while several active projects are underway in China, South-East Asia, the Gulf region and the Middle East (University of Nottingham, 2016, University College London, 2016).

1.2.2 Pharmacy in Jordan

Despite presenting a highly interesting subject of examination in this context, no case study to date has been conducted on the pharmacy sector in Jordan. And yet, the country offers a classic scenario of a developing country currently facing several emerging challenges, including a growing population, changing disease trends, and economic difficulties. Further, the country's economic and health developmental and reform agendas heavily revolve around investing in human resources, education and health. Despite this, the health system faces dire challenges, while existing strategies for HRH governance, planning, education and training have all been criticised as inadequate. This is particularly true of the pharmacy profession.

At face value, pharmacy in Jordan seems to be thriving: Jordan is a leading global pharmaceutical industry exporter and a regional medical tourism destination. In the decade leading up to 2015, the number of pharmacists, community pharmacies and pharmacy schools have all doubled. Underlying these seemingly positive quantitative trends, the (limited) available literature on pharmacy practice in the country paints a less bright picture and suggests the sector is facing a multitude of challenges.

This project was originally intended to be an attempt to help guide current efforts to develop pharmacy education in Jordan in line with FIPEd's needs-based approach to development. However, after engagement with local stakeholders and consultations within the research team, the scope was broadened to encompass the holistic strengthening of the overall capacity of pharmacists.

By broadening the scope of activity, the project sought to address issues concerning pharmacy governance, planning, education and training in Jordan, and four separate studies were

undertaken to examine each of these areas. The remainder of this Chapter describes the Jordanian healthcare system and the pharmacy profession using the available published literature, in order to provide the reader with the necessary country context. Chapter 2 describes the methodological issues presented by the project, and briefly describes the methods adopted in undertaking the four studies, each of which is individually presented in a separate chapter (Chapters 3 to 6). Finally, Chapter 7 presents an overarching discussion describing the collective contribution of the four studies to the local and global evidence base, not only on the pharmacy workforce, but ultimately on the project's foundational theme: HRH capacity development. The impact and implications of the project on the pharmacy sector in Jordan are also presented, along with a set of final conclusions and recommendations for future work in this area.

1.3 Jordan: Country Context

Jordan is an Arab nation located in Western Asia, on the east bank of the Jordan River and the Dead Sea (Figure 1.2). It is a small country that covers 89,320 square kilometres. While its geographical position has made Jordan more vulnerable to internal and external crises in neighbouring countries, the country is considered to enjoy a stable socio-political environment (World Bank, 2016). Jordan is divided into twelve (12) governorates across three regions: North, Central and South. The capital city, Amman, is situated in the north of Jordan, and is the administrative hub of the Amman Governorate. Aside from its substantial reserves of phosphates and potash, Jordan's natural resources are limited. Less than 12% of the land is agricultural, and Jordan's semi-arid climate means that water's natural availability is low (Schyns et al., 2015).

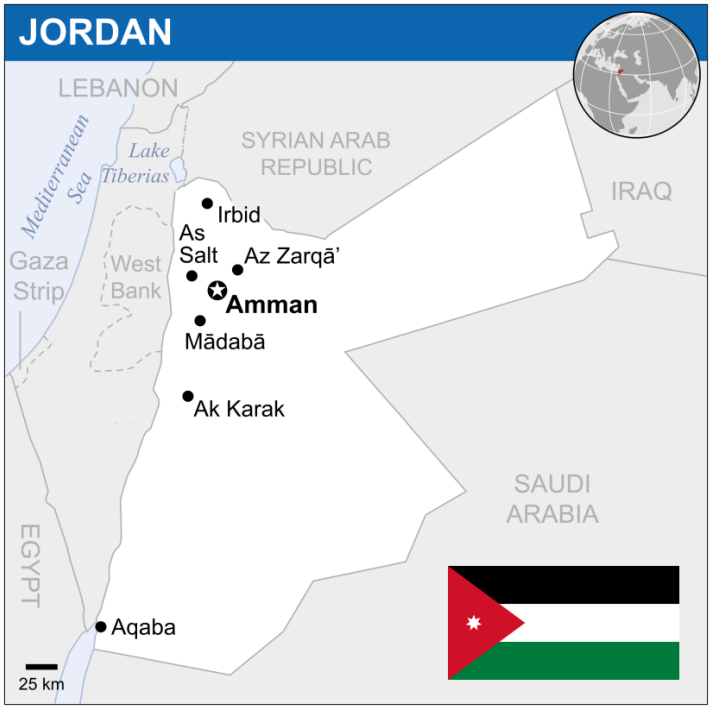


Figure 1.2 Map and flag of Jordan.
Source: Based on UN OCHA map (United Nations Office for the Coordination of Humanitarian Affairs, 2013)

The country's population was estimated at 6,675,000 inhabitants in 2014, with an average annual population growth rate of 2.2% (Department of Statistics, 2014). Figures on the current population count vary, but they all estimate the population in 2016 to be remarkably higher than in 2014, ranging between 8 and 10 million people when accounting for the recent influx of refugees (Central Intelligence Agency, 2016, Department of Statistics, 2016). The United Nations Refugee Agency (2016) estimates the total number of refugees and asylum-seekers entering Jordan from Syria, Iraq and elsewhere to be in excess of a million people by the end of 2015. More than 80% of the total population is urban, and close to 40% live in the Amman Governorate (World Health Organisation, 2015d). According to the latest World Bank (2014) country data, youth make up a large proportion of the population with more than 55% being under 25, and the population's median age is estimated to be 22 years. Unemployment levels are considered high; affecting more than 10% of the total working-age population, and about a third of the youth labour force (under age 25).The literacy rate among adults aged 15 years and over is high, and was estimated at 98% in 2012.

The World Bank describes Jordan as a developing, upper-middle income economy. The country's Gross Domestic Product (GDP) was $35.8 billion in 2014; with a GDP-per-capita of $5,423, markedly higher than the average figure for other developing countries in the region ($4,357). The economy of Jordan is one of the smallest in the MENA. Due to scarce supplies of oil, water and other natural resources, the country is heavily reliant on foreign aid, tourism and the service sector (World Bank, 2016). Regional political volatility in neighbouring countries has resulted in adverse financial and economic effects on the country's trade and tourism sectors, while the resulting high inflow of refugees has placed particular strain on Jordan's social and economic stability. Water scarcity makes Jordan dependent on external water resources through trade, while refined and cured petroleum account for 22% of the country's imports (The Observatory of Economic Complexity, 2016). Services represent more than 65 percent of GDP, while the industrial sector accounts for about 30% (World Bank, 2014). Jordan's 2007 Competitiveness Report listed the country's five primary industries as: tourism, information

technology, higher education, medical tourism, and pharmaceuticals. A large and growing private sector has made healthcare one of the country's top five primary industries, as well as transformed Jordan's medical services and pharmaceutical industries into two of the country's largest exporting sectors. As a result, Jordan has established itself as a leading global pharmaceutical industry exporter and regional medical tourism destination (Alsharif et al., 2010, Sharabati et al., 2010).

While the economy has been on the road to recovery since the 2011 wave of regional upheavals, it remains vulnerable to external shocks, with economic growth still relatively slow. While GDP rose by 3.1% in 2014, it is expected to grow by 2.5% in 2016 - well below the 6% rate deemed necessary to absorb new entrants into the workforce. Other problems Jordan faces include high unemployment, corruption and poverty (Sharp, 2016). Unemployment is high among the youth force (29%), particularly female youth (48%). In 2010, 14.4% of the Jordanian population lived below the national poverty line. Corruption, including the prevalence of intermediaries, nepotism and favouritism, is a long-standing issue. Like most developing countries, Jordan has also suffered from a 'brain drain' for years, and the government continues to face challenges in retaining the most highly-skilled and educated of its workers.

The country's lack of natural resources, its high unemployment rates, and its largely young population have led the government to take on a 'knowledge economy'-centred approach to developing the economy. Investing in human capital and job creation efforts has become a key national economic strategy aim (Powell and Snellman, 2004). Because of the growth of the population and the demands this engenders, progress made by the country on the human resources development front can't be sustained without significant progress in the efficiency and quality of its education and health services (World Health Organisation, 2011).

1.3.1 Health in Jordan

1.3.1.1 Demographic and Epidemiological Trends

Over the past few years, the health of Jordan's population has witnessed significant demographic changes. The basic health indicators are considered adequate and have been improving steadily, with average life expectancy at birth increasing from 72.5 years in 2004 to 74.1 years in 2014 (World Bank, 2014). Jordan also enjoys one of the lowest infant and child mortality rates in the region according to the WHO (2011), with an infant mortality rate of 15 per 1000 live births in 2015 (down from 23 per 1000 in 2005). In addition to recent migratory influxes, high fertility rates have also contributed to the population's high growth rate (World Health Organisation, 2011). Though the fertility rate has been decreasing over the past two decades, from 4.8 births per woman in 1995 to 3.4 in 2014, it remains high by international standards. Meanwhile, the death rate per 1000 population has decreased from 4.6 in 1994 to 3.8 in 2014. By 2050, over-60s are expected to account for almost 16% of the population, more than thrice the 2013 figure (5%) (Brown et al., 2009). Despite a projected decline in fertility rates, the population is projected to double within the next three decades according to WHO estimates (2009).

Health outcomes and services differ between urban and rural areas in Jordan. For instance, populations in rural areas experience higher incidences of malnutrition in children under 5, less antenatal care coverage, and higher rates of obesity (World Health Organisation, 2015d). Moreover, disease patterns have also been changing. Country-level data from the WHO World Statistics Report (2015) indicate Jordan has met - or made substantial progress towards meeting - most of the health-related Millennium Development Goals.

While the burden of vaccine-preventable infectious diseases has decreased (for instance, Jordan has been polio-free since 1995), the incidence of non-communicable diseases (NCDs) has grown – resulting in a shift in the epidemiological profile of the nation (Al-Nsour et al., 2012). NCDs are the leading cause of mortality among the Jordanian population, accounting for 76% of all deaths in 2014 according to WHO estimates. In particular, leading causes of death are cardiovascular diseases (35%), followed by cancers (15%), diabetes (7%) and chronic

respiratory diseases (3%). The probability of premature mortality (i.e. between ages 30 and 70 years) from the four main NCDs is 20%. NCD health risk factors, including hypertension, obesity and high cholesterol, are thus a significant concern for public health; especially as the burden of NCDs is projected to rise further in the years ahead (Brown et al., 2009).

Nevertheless, while NCDs are the main cause of mortality, infectious diseases are still responsible for a sizable proportion of all deaths. The WHO reports that diarrhoeal diseases, hepatitis and acute respiratory infections are leading morbidity causes, particularly among children. Although nationwide morbidity data is not collected, data on the clinical problems presented by patients to public primary healthcare centres show that diseases of the respiratory system are the most prevalent, followed by those of the digestive system (World Health Organisation, 2011).

1.3.1.2 The Jordanian Healthcare System

Governance

Headed by the Minister for Health, the High Health Council (HHC) was established in 2002 to formulate national health strategies that are in line with the objectives set out in the government's National Agenda for Jordan. The HHC's latest strategy document (2015), *The National Strategy for the Health Sector in Jordan 2015-2019*, was produced in collaboration with the WHO and the participation of various healthcare stakeholders.

The Jordanian health system is a complex combination of three major sectors: public, private and non-governmental. While all sectors participate in providing primary, secondary and tertiary healthcare services, each sector has its own financing and delivery bodies and mechanisms. Figure 1.3 illustrates the relevant authorities for each sub-sector.

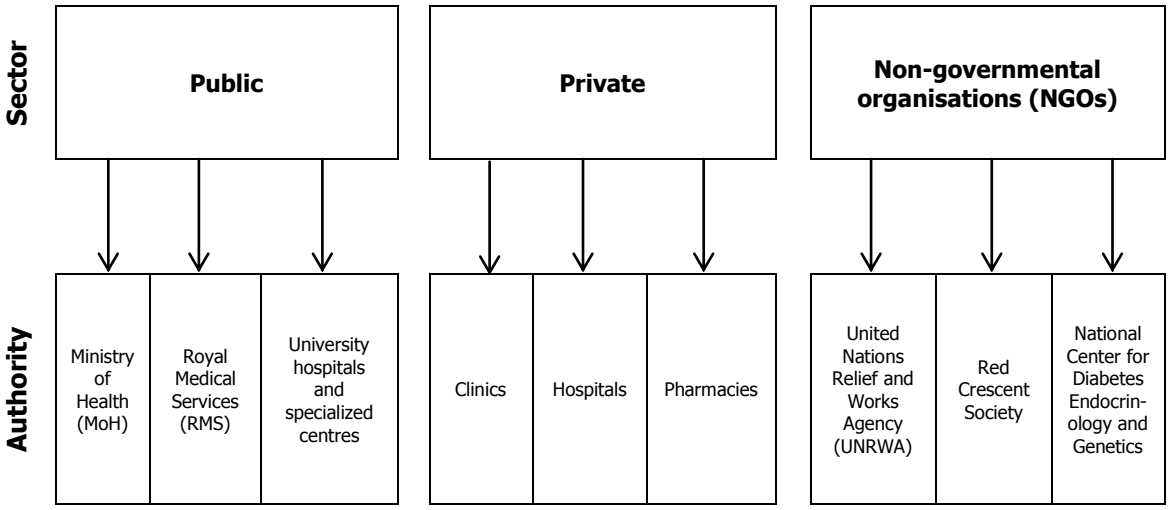


Figure 1.3 Healthcare providers in Jordan.

Public Healthcare Provision

The public sector is composed of two main public programmes that finance and deliver healthcare services: the Ministry of Health (MoH) and the Royal Medical Services (RMS). The MoH licenses, monitors and regulates all health professionals and health institutions in Jordan. A number of health councils and independent public organisations are involved in the MoH's monitoring functions, including the HHC, the Jordanian Medical Council, the High Nursing Council, the Private Hospitals Association, the Jordan Food and Drug Administration, as well as the country's health professionals' associations.

In addition to providing highly-subsidised primary, secondary and tertiary healthcare for the entire population, the MoH provides full health coverage for all civil servants and their dependents, as well as the disabled, children under 6, adults over 60, and individuals certified as poor. To that purpose, the MoH runs an extensive network of primary healthcare services, which includes 377 primary health centres (PHCs), 98 comprehensive HCs, 202 secondary HCs, 452 maternal child care HCs, 13 chest disease centres, and 397 dental clinics. At about 2.3

centres per 10,000 populations, and with an average travel time of 30 minutes to the nearest centre, this is considered a high density system by global standards. The MoH owns and operates 31 hospitals, with a combined capacity of 4,693 beds, representing 39% of all of Jordan's hospital beds.

The RMS's military health insurance system provides coverage to active and retired military personnel and their families (Al-Worikat, 2001). It also provides high quality care, including specialty treatments and complex procedures, and serves any Jordanian nationals referred to it from the MoH or the private sector, as well as Arab patients in general. The RMS operates 5 health centres and 11 hospitals, with a combined capacity of 2,259 beds, representing 19% of the national total.

A minor proportion of public sector medical services are run by two university-based governmental hospitals; Jordan University Hospital and King Abdullah University Hospital. Patients served by the hospitals include referrals from the MoH, University employees and their dependents, and private company employees (as part of contractual agreements with the hospitals). The combined bed capacity of both hospitals is 1100 (representing 9% of the national tally). A specialised centre that falls under the umbrella of the public sector is the King Hussein Cancer Centre which is considered the pre-eminent cancer treatment centre in Jordan.

Private Healthcare Provision

In terms of curative primary care, the private health sector accounts for about 40% of all initial patient contacts, primarily delivered by 2,237 community pharmacies, widely considered to be the most accessible primary healthcare facilities in Jordan (Al-Wazaify and Albsoul-Younes, 2005, Al-Wazaify et al., 2006). The private sector also includes 63 hospitals and several private clinics, accounting for 33% of the national bed-capacity tally.

The private sector is a major provider of the country's state-of-the-art technology and advanced treatment capabilities. For instance, half of the nation's medical technology is housed in private hospitals and clinics. The sector also continues to attract high numbers of patients from

neighbouring Arab countries, making Jordan a regional medical tourism hub. In 2010, the private sector received nearly US$1bn in revenues from more than 250,000 visiting patients.

Non-Governmental Sector

A number of Non-Governmental Organisations (NGOs) based in Jordan offer health services to the public. The largest of these is the United Nations Relief and Works Agency (UNRWA) for Palestine Refugees in the Near East, which provides primary care to more than two million registered Palestinian refugees based in Jordan. A relief and human development agency founded by the UN in 1948 (following the Arab-Israeli conflict) UNRWA (2014) operates 23 primary healthcare facilities in Jordan, as well as 12 women's programme centres and 8 community rehabilitation centres. Other prominent healthcare-providing NGOs include the Jordanian Red Crescent Society, which provides emergency care to both the general population and refugees; and the National Centre for Diabetes Endocrinology and Genetics, which provides healthcare services, training and education in the areas of diabetes, endocrinology and genetics.

Health Insurance Coverage

The government's HHC has been publicly adamant on making health services accessible and available to everyone. According to a 2011 MoH-WHO report (2011), about 82% of the total population is insured; with 35% covered by the MoH's Civil Health Insurance Programme (CHIP), 27% by the RMS, 10% by private health insurance plans, 8% by UNRWA, and 2% by university hospitals.

Even though the MoH is required to provide subsidised care to all citizens, close to a fifth of the population (18%) do not have any health insurance, while citizens and their dependents are often covered by more than one insurance programme. This discrepancy, coupled with the limited availability of reliable data, makes it difficult to accurately determine the numbers of the insured and uninsured (High Health Council, 2014).

1.3.1.3 Healthcare Expenditure

In 2014, Jordan's total annual expenditure on health services was $2.7 billion approximately, accounting for 7.5% of GDP which, though down from 8.9% in 2005, is still relatively high for a middle-income country according to the HHC (2014), especially when compared against several high-income countries in the region (3.6% in UAE, 2.2% in Qatar) and internationally (9.1% in UK, 2.2% in Japan).

Annual per-capita expenditure on health was estimated at $359 in 2014. In 2013, health expenditure accounted for 13.5% of total government spending, with public health expenditure representing 70% of the total health spending, up from 53.6% in 2005 (WB, 2014). A majority of the remaining 30% was provided by private sources, which include private commercial insurance for individuals, employee health plans by companies and out-of-pocket expenditure for healthcare services and drugs at pharmacies (High Health Council, 2014). Curative care spending by the MoH is high at 69%; while expenditure on primary care is 22.4%.

1.3.1.4 Pharmaceutical Expenditure

Total pharmaceutical expenditure (TPE) in Jordan reached US$ 628.7 million in 2012, equivalent to US$ 98.42 per-capita. Moreover, TPE accounted for 2.03% of GDP and 26.75% of total health spending. Such expenditure levels on drugs are also considered high compared to other nations in the same income group (High Health Council, 2014). Private expenditure on pharmaceuticals represented 54.5% of TPE, while public expenditure accounted for the remainder (45.5%).

Most locally-manufactured medicines are alternative versions of original drugs, and are sold as branded generics. The pharmaceutical sector is one of Jordan's primary profitable industries, generating about 20% of Jordan's GDP from manufacturing, and is responsible for exports to over 60 countries around the world, with 90% of the exports going to the Arab world (World Health Organisation, 2011, The Jordanian Association of Pharmaceutical Manufacturers, 2016). The industry – currently comprised of 16 companies – is export-oriented, with 81% of all production destined for exportation to foreign markets (The Jordanian Association of

Pharmaceutical Manufacturers, 2016). International trade data shows that in 2013 Jordan exported $9.1 billion; principally comprised of packaged and unpackaged medicaments, which represent 10% of total exports (The Observatory of Economic Complexity, 2016). Despite the significant size of the local industry, however, most pharmaceutical market products sold in the country (75%) were imported (World Health Organisation, 2011).

1.3.1.5 Healthcare Human Resources

Jordan is considered one of the MENA region's key training centres for health professionals, and a major supplier of HRH to countries in the region(World Health Organization, 2009). Across all health professions, workforce size and density (i.e. numbers per population) have been rising steadily. For instance, between 2004 and 2014, the numbers of physicians increased by 63.7%, dentists by 75.3%, pharmacists by 81.4%, nurses by 74.7% and midwives by 74.6%. In 2014, according to MoH data, presented in Table 1.1 below, for every ten thousand inhabitants, Jordan had 29.5 physicians, 41.4 nurses, 18.3 pharmacists and 10.3 dentists. These rates are relatively high when compared to the average densities for the Eastern Mediterranean region, which are 12 for physicians, 18 for nurses, 5 for pharmacists and 3 for dentists (World Health Organisation Regional Office for the Eastern Meditteranean, 2011). Nevertheless, at 1.4 nurses for every physician, Jordan's nurse-to-doctor ratio is among the lowest in the world (Buchan et al., 2013). The latest published figures show that there were 5,123 pharmacy assistants in 2011, of whom 2685 (52.4%) worked in the public sector.

Table 1.1 also shows the distribution of health personnel across all health sectors and, where available, sub-sectors. A majority of physicians, dentists and pharmacists are concentrated in the private sector. At 92.4%, pharmacists have the highest concentration in the private sector, Registered nurses are distributed evenly between the sectors, and most assistant and associate degree nurses are employed by the MoH. The majority of health workers work in urban areas.

Sector / Health Worker	Public sector			Private Sector	UNRWA	Total	Density per 10,000 population
	MoH	RMS	University hospitals				
Physicians	4280 (21.8%)	1552 (7.9%)	1127 (5.7%)	12590 (64.1%)	106 (0.5%)	19655 (100%)	29.45
Dentists	723 (10.5%)	275 (4%)	94 (1.4%)	5760 (83.7%)	29(0.4%)	6881 (100%)	10.31
Pharmacists	586 (4.8%)	286 (2.3%)	51 (0.4%)	11290 (92.4%)	2 (0.01%)	12215 (100%)	18.3
Registered Nurses	4673 (25.3%)	3389 (18.4%)	1055 (5.7%)	9293 (50.4%)	44 (0.2%)	18454 (100%)	27.65
Assistant Nurses	2171 (54.6%)	0 (0.0%)	135 (3.4%)	1490 (37.5%)	180 (4.5%)	3976 (100%)	5.96
Associate Degree Nurses	2366 (45.8%)	2633 (50.9%)	172 (3.3%)	0 (0.0%)	0 (0.0%)	5171 (100%)	7.75
Midwives	1446 (52.4%)	236 (8.5%)	20 (0.7%)	1026 (37.1%)	34 (1.2%)	2762 (100%)	4.14

Table 1.1 Workforce distribution by sector and workforce density per 10,000 population.
Source: Ministry of Health, 2014.

1.3.1.6 Health Challenges in Jordan

The Jordanian healthcare system faces challenges; especially in the context of a growing population, a shifting epidemiological profile and slow economic growth, factors which continue to exert greater pressure and demand for healthcare services. Moreover, a disproportionately large share of health expenditure is allocated to curative care, while primary care remains underused and underutilised. This, coupled with the high prevalence of NCDs, has prompted the government to launch a preventative health strategy, exemplified by initiatives such as anti-smoking and exercise promotion campaigns. Comprehensive national-level data on morbidity is lacking, making the systematic assessment of the disease burden highly challenging.

The above-average growth of the population in recent years, principally attributed to the high influx of refugees, particularly from Syria, poses a major challenge to the Jordanian healthcare system (High Health Council, 2015). Increased demand levels for healthcare services now

exceed the capacity of an already tightly-resourced public healthcare sector. In addition, the high prevalence of communicable diseases, among Syrian refugees in particular, has increased the risk of contagion within the Jordanian population at large (particularly the host communities) potentially raising the already-high burden of morbid diseases.

The high and hard-to-sustain levels of pharmaceutical expenditure are a priority cost-containment issue. A recent report by the High Health Council stated that the relatively high total pharmaceutical expenditure can be attributed to three main trends within the private sector:

1. " The prescribing behaviours of physicians and pharmacists, due to the lack of sufficient pharmaceutical regulatory policies, are partly responsible for high levels of drug prescription and consumption.
2. Patient behaviour, in the form of self-medication, also contributes to the inefficient use of medicines.
3. The uncontrolled and extensive influence of pharmaceutical companies' promotional efforts may play a key role." (High Health Council, 2014).

It is important to note that no evidence was presented by the report to supports the claims listed above. In addition to increased consumption, rising drug costs have also contributed to the high growth rate in drug expenditure, currently at 17% per year. For this reason, the government's health reform strategy considers the Jordanian pharmaceutical sector a high priority (World Health Organisation, 2011). Analysts have also highlighted the urgency of implementing a strategy of cost-containment through the effective deployment of review mechanisms and prescription drug policies (High Health Council, 2014). In this context, the High Health Council launched its *National Strategy for Drug Expenditure* 2012-2016, in collaboration with pharmaceutical sector stakeholders.

Despite the government's stated objective to provide comprehensive health insurance cover to all, many Jordanians remain uninsured while subsidies are inaccessible to some of the poorest inhabitants. Plans to reset household capacity to pay according to household income are being considered as a result. MoH hospitals face a number of constraints that limit their ability to

provide better healthcare services to the poor and uninsured, due principally due to hospital staff lacking the basic information on the evidence-based medicine they need to efficiently operate and implement standardised treatment protocols (World Health Organisation, 2011).

Accessibility and equity is another main challenge facing the system. The concentration of health professionals in urban areas and the lower health outcomes witnessed in rural areas particularly exemplify this issue. Further, WHO assessments of HR development (2009) have identified a lack of comprehensive strategies or plans to fulfil local and regional needs, notably highlighting gaps in HR management. For instance, there are no formal continuing education systems for health professionals, while the relationship between pre-service educational institutions and health service provision institutions remains weak (World Health Organization, 2009). The absence of the HHC in health education policy planning was also highlighted as an HRH challenge in the latest Health Policy review.

HRH reforms addressing the geographic distribution, training and continuing education of health professionals may improve the access and quality levels of health service delivery. In this regard, the National Human Resources for Health Observatory was recently launched by the High Health Council in collaboration with the WHO and MoH, as a dedicated working group tasked with updating HRH intelligence, addressing HRH-related issues and challenges, and providing reliable HRH data through its Annual Reports.

1.3.2 Pharmacy Context

1.3.2.1 Pharmacy Practice

Historical Overview

Pharmacy practice as a modern profession started in Jordan in the early 1930s, with just a few pharmacists practicing in their community pharmacies (Al-Wazaify and Albsoul-Younes, 2005). The first independent community pharmacy, 'Al Arabiah Alkobra' (the Great Arab Pharmacy), opened around 1932 in downtown Amman. More than two decades later, in 1957, the Jordan Pharmaceutical Association (JPA, also known as the Jordanian Pharmacists Association), was established as the country's only pharmacy professional association, carrying the dual role of representing and regulating pharmacists.

In 1979, the first pharmacy school was founded at Yarmouk University in the city of Irbid. Prior to that, Jordanian pharmacists received their formal education in neighbouring countries, including Syria and Turkey. The early 1990s were marked by the opening-up of Jordanian higher education to the private sector, with the creation of the country's first private pharmacy school. Table 1.2 below illustrates a timeline of key events in the history of the pharmacy profession in Jordan.

Rapid growth in the number and size of pharmacy services ensued in the years since. At present, Jordan boasts more than 15,000 registered pharmacists and 2450 community pharmacies. Changes in pharmacy education have been rapid, too. There are now 15 pharmacy schools in the country. Meanwhile, attempts to transform the role of the pharmacist and reshape practice in Jordan have also been underway.

The global emergence of the concept of pharmaceutical care triggered a local drive towards expanding the traditional role of pharmacy in Jordan, from being primarily product-oriented to one that also involves the provision of optimal clinical care to the patient. Educational institutions responded by implementing new programmes that were intended to shift the practice paradigm.

In the early 2000s, the clinically-oriented Doctor of Pharmacy and Masters of Clinical Pharmacy degree courses were introduced into the country. Pharmacy practice today spans a variety of settings that include community pharmacies, hospital pharmacy, the manufacturing industry, pharmaceutical wholesalers and distributors, academic institutions, professional and regulatory bodies, research and consultancy companies as well as other governmental and intergovernmental organisations.

Year	Key event(s)
1932	The first independent pharmacy opens.
1957	The provisional Jordan Pharmaceutical Association Law No. 10 of 1957 is enacted and the JPA is created and established.
1962	The first pharmaceutical manufacturer, the Arab Pharmaceutical Manufacturing Co., is founded.
1972	The JPA Law No. 10 of 1957 is updated and the JPA Law No. 51 of 1972 is enacted.
1979	The first pharmacy school (public) opens at Yarmouk University.
1990	The first private pharmacy school opens at Al Ahliyyah Amman University.
2001	The provisional Drug and Pharmacy Law No. 80 of 2001 is enacted resulting in the deregulation of pharmacy assistants and the emergency of retail pharmacy chains. The first branch of 'Pharmacy1', the first and largest pharmacy chain, opens.
2003	The Jordan Food and Drug Administration (JFDA) is established.
2006	The JFDA releases the first version of the Jordan National Drug Formulary.
2013	The provisional Drug and Pharmacy Law No. 80 of 2001 is updated and the Drug and Pharmacy Law No. 12 of 2013 is enacted.

Table 1.2 Timeline of key events in the history of the pharmacy profession in Jordan.

Community Pharmacy

The community pharmacy, legally referred to as the 'public pharmacy', is defined by law as "the pharmaceutical institution which has the exclusive right to prepare drugs and dispense the same, as well as infants' milk formula or their special formula and supplementary food directly for the public against the prices determined by the Ministry" (Jordan Pharmaceutical Association, 2013). In the 2005-2015 period, the number of community pharmacies increased by more than 50%, surpassing 2,200 pharmacies (Al-Wazaify and Albsoul-Younes, 2005, Jordan Pharmaceutical Association, 2015a). MoH statistics show that by the end of 2015, there were 2461 community pharmacies.

Despite being widely-known as 'public pharmacies', all community pharmacies in Jordan are privately owned. In all Jordanian pharmacies, the pharmacy team is divided into pharmacists and pharmacy assistants. The law stipulates that prescription-only medicines may not be dispensed in the absence of a pharmacist, though pharmacy assistants are allowed to sell non-prescription medicines. A Responsible Pharmacist must be assigned, and is required to manage and supervise the day-to-day activities of the pharmacy during all opening hours. The law also dictates that a label be attached to every dispensed medicine, and that pharmacists must provide relevant consultations to patients on medicines' use.

The provisional Drug and Pharmacy Law No. 80 of 2001 created new pharmacy ownership regulations that allowed for the establishment of retail chain pharmacies. In 2001, the first branch of the "Pharmacy1" chain of pharmacies opened. There are at present 11 such pharmacy chains in Jordan, of which Pharmacy1 (with more than 60 branches) is the largest. Pharmacy1 offered the first home medicine delivery services in the country. Chain pharmacies in Jordan are generally regarded positively; retail chain pharmacists are perceived to be well-trained and offer high quality patient-centred services (Alefan and Halboup, 2016). There are strict regulations on the minimum distance between any two pharmacies.

The community pharmacy is considered the most accessible primary healthcare facility in Jordan (Alefan and Halboup, 2016, Al-Wazaify and Albsoul-Younes, 2005). A 2008 study

examining societal perspectives of community pharmacy reported that a majority of Jordanians sought advice from pharmacists for first-line treatments of non-serious conditions, while one in four sought to receive additional extended services, including blood pressure and blood glucose measurement, from their pharmacist (Wazaify et al., 2008). More than 75% of respondents were in favour of the provision of extended services by pharmacists, with more than 35% indicating their willingness to pay for such services.

Nevertheless, pharmaceutical care provision in Community Pharmacies suffers from several limitations (Al-Wazaify and Albsoul-Younes, 2005, Issa et al., 2013). A 2012 study found that although community pharmacists completely support the concept of pharmaceutical care, a number of barriers hampered its implementation (Aburuz et al., 2012a). The study reported that community pharmacists' basic understanding of pharmaceutical care as a concept is limited, and that this may be due to training inadequacies. Indeed, most pharmacists in Jordan have only rarely or occasionally ever provided pharmaceutical care services. A critical gap in communication has also been observed, whereby pharmacists have been resistant to communicating with physicians – whether directly or in writing. The lack of adequate information on pharmaceutical care, appropriate space to conduct consultations and necessary access to medical files, as well as the absence of support from the JPA, have all been identified by pharmacists as additional barriers.

Limited interaction between pharmacists and patients is another barrier. Otoom et al. (2002) found that, in primary healthcare facilities pharmacies, the average dispensing interaction (from receiving the prescription to handing over the product) is less than 30 seconds, indicating an interaction time that is too short for proper advice on medicine use to be given.

Hospital and Clinical Pharmacy

According to the MoH, a total of 109 hospitals in Jordan were in operation in 2014. Hospital pharmacies may be based in either public or private hospitals, and are broadly divided into 'inpatient' and 'outpatient' pharmacies (Al-Wazaify and Albsoul-Younes, 2005). Pharmacies sited in hospitals and health centres owned and operated by the MoH, RMS and not-for-profit

organisations (e.g. UNRWA) are referred to as 'private pharmacies', and are overseen by the MoH's Clinical Pharmacy Directorate. Developing the field of pharmaceutical care and the provision of clinical pharmacy services (particularly in hospital settings) has been identified as a priority area for educators, policymakers and researchers.

In terms of education, the Masters of Clinical Pharmacy and the Doctor of Pharmacy degree courses have been launched with a view to better equip pharmacists with the training and knowledge required to provide quality clinical pharmaceutical care. The MoH issued job descriptions for holders of the Clinical Pharmacy M.Sc. working in the public sector in 2005. These formally stated their clinical duties which include therapeutic drug monitoring, rational use of drugs, and patient counselling among other responsibilities (Tahaineh et al., 2009). Being the first formal, detailed role description for pharmacists, the publication of this job description was considered a significant and positive step for the profession (even though it did not include PharmD pharmacists) (Alefan and Halboup, 2016).

Researchers in Jordan have conducted several studies that demonstrate the impact of clinical pharmacists on health outcomes. For instance, clinical pharmacists can improve the lipid profiles of dyslipidemic patients (Tahaineh et al., 2011, Wishah et al., 2015), the glycaemic levels in diabetic patients (Jarab et al., 2012b, Abuloha et al., 2016, Wishah et al., 2015), the quality of life of patients with chronic obstructive pulmonary disease (COPD) (Jarab et al., 2012a), and adherence to antimicrobial prophylaxis guidelines (Telfah et al., 2015, Al-Momany et al., 2009). Moreover, hospitals with existing clinical pharmacy services have reported successful outcomes. One university hospital reported experiencing a successful implementation of outcomes from clinical pharmacy services, with its physicians reporting high acceptance rates of clinical pharmacists (Al-azzam et al., 2013). Another study from one of RMS's hospitals found that the presence of as little as one clinical pharmacist in its Intensive Care Unit resulted in a significant reduction in therapy costs through a reduction of drug consumption (Aljbouri et al., 2013). Meanwhile, a specialist cancer centre in Jordan found that clinical pharmacy interventions in its outpatient paediatric haematology-oncology clinics were not only successful, but also necessary to ensure continuity of care in the future.

Despite the above achievements, the proper implementation of clinical pharmaceutical services in Jordan remains limited, principally due to a number of barriers. In 2012, there were less than 10 hospitals and institutions offering comprehensive clinical pharmaceutical care services in Jordan (AbuRuz et al., 2012b). Al-Wazaify and Albsoul-Younes (2005) report that in most hospitals the main duties of pharmacists are administrative, such as stock control and drug ordering, while dispensing duties are largely carried out by pharmacy assistants. Despite the introduction of a role description by the MoH, there is still a lack of widespread institutional policies delineating the role and responsibilities clinical pharmacists as part of the healthcare team (Alefan and Halboup, 2016).

In this regard, physicians have been identified as a major barrier to expanding the role of the clinical pharmacist. There is anecdotal evidence of a widespread perception among pharmacists that they are not regarded highly by their physician colleagues, and that the latter rarely expect them to provide any clinical services (Tahaineh et al., 2009). It is also believed that physicians are intimidated by the potential loss of their prescribing role to the potentially expanding roles of clinical pharmacists (AbuRuz et al., 2012b). A 2009 study by Tahaineh et al. (2009) was undertaken to evaluate the experiences, perceptions, and expectations of physicians regarding pharmacists roles in hospitals. The study found that interactions between pharmacists and physicians are limited. While most physicians perceived pharmacists to be a reliable source of medicines information and expected them to educate patients about the appropriate use of medicines, only 34.7% expected assistance from pharmacists in designing treatment plans and only 16.3% reported feeling comfortable about receiving input from pharmacists on prescribing medicines. The study concluded that physicians in Jordan mostly continue to view pharmacists through the traditional paradigm, and resist accepting or recognising newer pharmacy clinical services. The researchers suggest that increasing the quantity of clinical pharmacists in hospitals, with the support and endorsement of the MoH, would increase physician-pharmacist interaction levels and encourage greater clinical and pharmaceutical care provision across the country.

For their part, AbuRuz et al. (2012b) performed a study a few years later with a similar aim to that conducted by Tahaineh at al.. The results confirmed little progress had taken place on this issue, with physicians reporting negative experiences of pharmacists providing clinical care. Physicians also reported that they do not perceive pharmacists to be currently ready to provide pharmaceutical care services.

Pharmaceutical Industry

There are currently 25 registered pharmaceutical companies in Jordan, mostly manufacturing generic or branded generic medicines. There are also 121 medical cosmetics and appliances manufacturing companies. As of 2014, there were also six Clinical Research Organisations (CROs), which specialise in clinical and pharmaceutical research and provide various research services for the country's pharmaceutical industry (Al-Wazaify and Albsoul-Younes, 2005).

Established in 1996, the Jordanian Association of Pharmaceutical Manufacturers (JAPM) is a voluntary non-profit organisation that represents the industry. Its members include 14 pharmaceuticals-producing companies, six CROs, two research and pharmaceutical services providers, one nutrition-and-baby-food manufacturer and one medical appliances manufacturer. Founded in 1962, the Arab Pharmaceutical Manufacturing Co. is the oldest pharmaceutical manufacturer in Jordan. The number of pharmacists working in the sector is unknown, but data from the JAPM show that the 14 pharmaceutical manufacturers employ more than 5,400 staff.

Jordan is host to 460 drug importers and/or wholesale distributors. These are locally referred to as 'drugstores'. A drugstore is legally defined as "any pharmaceutical institution prepared for importing, purchasing, selling, storing any distribution of drugs to pharmacies and any entity authorised to sell those drugs" (Jordan Pharmaceutical Association, 2013). According to Alefan and Halboup (2016), the drugstores are authorised to distribute 84 medicinal agents and 160 subagents, and must be registered with the Jordan Food and Drug Administration; they distribute both imported and locally manufactured products to retail pharmacies and private hospitals around the country, with most (65%) transactions taking place in the capital Amman.

In drugstores, pharmacists tend to work as medical sales representatives, an occupation reserved by Jordanian law solely for registered pharmacists.

Prescribing, Dispensing and Medicines Use

Prescribing Patterns

Prescribing medicines is the responsibility of physicians in Jordan. The marketing of medicines by the pharmaceutical industry is not only widespread but also directly affects the prescribing behaviour of physicians. The practice has been identified as a key factor behind Jordan's high pharmaceutical expenditure levels (as discussed in Section 1.2.6).

A recent study by El-Dahiyat et al. (2014) found that a majority (77.4%) of physicians prescribed generics, while 69.4% accepted brand-to-generic substitution of their prescriptions by pharmacists. However, private sector physicians tended to oppose brand-to-generic substitution, an indication that private physicians' prescribing behaviour may be influenced by corporate incentives. These can take various forms, ranging from conference registrations to direct cash payments. In contrast, there are greater restrictions on public physicians to participate in pharmaceutical companies' events and incentive schemes.

Dispensing Patterns

According to Article 87 of the Drug and Pharmacy Law No. 12 of 2013, dispensing a prescription-only medicine without prescription is considered a criminal offence that is subject to pecuniary penalties (Jordan Pharmaceutical Association, 2013). Although all medicines in Jordan are technically classified into 'prescription-only' or 'over-the-counter' products; classifications and dispensing laws are not strictly enforced, and patients can – in general – buy any medication without prescription (except controlled narcotics and major tranquilisers) (Al-Wazaify and Albsoul-Younes, 2005). For example, it is common for patients to buy antibiotics from the pharmacy without prescription (Wazaify et al., 2008). In this regard, a 2005 study by Al-Bakri et al. (2005) reported that about half of all antibiotics were dispensed without prescription, leading the researchers to issue concerns about the implications in terms of

increased levels of bacterial resistance. These findings are confirmed by those of a 2015 study by Almaaytah et al. (2015), which found that 74% of 202 pharmacies dispensed antibiotics without prescription. A report from the Ministry of Health reported that injectable medicines are also sometimes sold over-the-counter without a prescription (Ministry of Health, 2011). Further, a study by Yousef et al. (2008) on self-medication patterns in Jordan reported that it is not uncommon to find unsupervised pharmacy assistants unlawfully running pharmacies and supplying medications to patients. This was also reported to occur in hospital settings (Al-Wazaify and Albsoul-Younes, 2005).

Medicines Use Patterns

Research suggests that self-medication (or self-treatment) is common in Jordan (Alkhatatbeh et al., 2016, Yousef et al., 2008). The prevalent tendency among Jordanians for self-treatment, coupled with the OTC acquisition of non-prescribed medicines, has raised concerns over medicines' use and misuse. Yousef et al. (2008) found that 42.5% of the Jordanian population commonly practice self-treatment. They also found that patients resorted to self-medication for several reasons, the most common of which are: (1) to self-treat minor ailments that did not warrant a visit to the doctor, (2) to avoid the long waiting times usually experienced when seeing physicians, and (3) to avoid costs associated with visits to the doctor. Less than 15% of patients rely on advice from pharmacy staff when selecting medication, while more than 21% rely on informal advice by other healthcare professionals, such as nurses and dentists. This confirms low levels of engagement between pharmacists and patients. Additionally, patients were found to be highly familiar with branded medicines, often ordering non-prescription medicines by their brand names.

Prescription and non-prescription medicines misuse is prevalent, and current control methods are ineffective (Albsoul-Younes et al., 2010). Overuse or underuse of medicines contrary to the advice of healthcare professionals are also commonly reported (Yousef et al., 2008). Otoom and Sequeira (2006) set out to investigate the most common issues of irrational drug use in Jordan, asking ninety pharmacists and physicians to identify the five main drug use problems, finding these to be (1) the over-prescribing of nonsteroidal anti-inflammatory drugs; (2) overusing

antibiotics and anti-diarrhoeals; (3) prescribing by trade name as opposed to generic name; (4) the excessive use of antibiotics for treating minor urinary tract infections; and (5) self-medication.

Meanwhile, Qato's study (2013) found that the overuse of antibiotics and underuse of medications for chronic disease are common among Palestinian refugee communities in Jordan, who generally buy medicines from private community pharmacies. The researcher concluded that the misuse among this particular community may be contributing to higher immature morbidity and mortality rates. Al-Niemat et al. (2014) also found antibiotics to be overprescribed by paediatricians in one hospital.

Complementary and alternative medicines are also widely used among Jordanians, especially among cancer patients, according to Afifi et al. (2010). However, the medicinal plant market is not properly regulated and herbalists are often not adequately educated or trained (Alefan and Halboup, 2016). Pharmacists' knowledge of complementary medicines and their therapeutic use was also reported be less than optimal (Shilbayeh, 2011).

1.3.2.2 Pharmacy Regulation

Pharmacy Practice Governance

Pharmacy practice is governed by a number of statutory laws, frameworks, and regulations. The main laws include the Drug and Pharmacy Law No. 12 of 2013, the Ministry of Health's Public Health Act 2008, the Narcotic Drugs and Psychotropic Substances Law 1988 and various others. Table 1.3 lists the main laws governing the pharmacy sector in Jordan, as well as a brief description of every law's scope of legislation. Some scopes overlap; for instance, the registration and licensing of pharmacists are listed in the JPA's Law as well as the Drug and Pharmacy Law. According to Article 20 of the Drug and Pharmacy Law No.12 of 2013, the practicing of pharmacy "includes the preparation, composition, manufacturing, packing, portioning, import, storage, distribution, purchase for sale or dispensing of any drug, infant milk formula or their special formula and supplementary food, or drug advertising for the sake of

acquainting the physicians with this drug." Accordingly, only pharmacists are allowed to undertake any of these roles (Jordan Pharmaceutical Association, 2013).

Name of law	Scope of legislation
Jordan Pharmaceutical Association Law No. 51 of 1972	Functions, structure, and finance of the JPA; JPA Council formation and elections; pharmacist's membership and registration requirements; pharmacy register content and management; pharmacist's rights and duties; ethical and disciplinary issues; pharmacist's social security and pension funds.
Narcotic Drugs and Psychotropic Substances Law No 11 of 1988	Restrictions relating to the preparation, manufacture, dispensing, prescribing, import and trade of narcotics and psychotropics; offences and punishment of offences involving narcotics and psychotropics.
Public Health Law No. 47 of 2008	Functions and duties of the Ministry of Health; health and allied health professional practice; private hospitals and medical centres; mental health and addiction; infectious diseases and immunisation; water and chemical substances; smoking prevention; public health offences and punishments.
Drug and Pharmacy Law No. 12 of 2013	Definition, registration, distribution, prescribing, and dispensing of drugs; pharmacy practice scopes and areas; pharmacist's registration and licensing; pharmaceutical facilities registration, licensing ownership and management (i.e. drugstores, private and public pharmacies); controlled substances use and misuse; drug advertising and promotion; offences and punishments.

Table 1.3 Laws governing pharmacy practice in Jordan.

The MoH's Health Professions and Institutions Licensing Directorate is responsible for the registration and inspection of community and hospital pharmacy premises. The JPA also carries out its own inspection activities as well as monitors the sector's advertising activities. Direct-to-public advertising of any drug or substance that has medicinal characteristic, or infant's milk formula and supplementary food, in any of the readable, or visual or audible media, is not permitted (Jordan Pharmaceutical Association, 2013). The registration, pricing and inspection of medicines and medical devices are the administrative responsibilities of the Jordan Food and Drug Administration (JFDA). JFDA inspection services extend to manufacturing companies, pharmacies and wholesalers. The JFDA is widely considered to be a strong and well-functioning regulatory agency in Jordan (Conesa et al., 2009).

Jordan Pharmaceutical Association

While the regulation of the pharmacy sector in Jordan is complex, and is carried out by separate entities, it can be broadly categorised as state-sanctioned self-regulation (Moran and Wood, 1993). Enacted in 1957, the Jordan Pharmaceutical Association Law No. 10 established the Jordan Pharmaceutical Association (JPA), which is also referred to as the Jordanian Pharmacists Association. The JPA is the only professional association in Jordan and, as such, is the sole statutory regulatory and registration body for pharmacists. In addition, it acts as the principal professional body representing, promoting and developing the pharmacy profession in the country. The JPA maintains the pharmacists register, which holds the most comprehensive and up-to-date information on the pharmacy workforce. The JPA also manages a pension fund and a health insurance scheme for its registrants, in addition to offering financial support and loans to pharmacists in need. Table 1.4 below lists the six official aims of the JPA.

The JPA is headquartered in central Amman, and oversees 11 other secondary branches distributed across Jordan's governorates. The JPA is governed by a Council headed by the President. Both the Council and the President are elected by registered pharmacists, through elections held every two years. The Council is made up of ten members who are practicing pharmacists: four pharmacy owners, three drugstore (or distribution warehouse) owners, and three employees serving in the public sector. It's worth noting that, at the time of writing, internal divisions within the JPA's Council have led the majority of its members to resign, forcing the dissolution of the Council. At present, the JPA is overseen by an emergency Council appointed and headed by the MoH's General Secretary until a new Council is elected by the JPA's members. The next elections are due to be held before summer 2016.

Extract from Article 5 of the JPA Law No.51 of 1972 **The JPA carries out its activities in accordance with the following aims:**
a – To protect, defend and organize the profession and preserve its interests. b – To collaborate with the MoH and all agencies and institutions involved in the developing the quality of pharmaceutical and medicinal services and providing them to the public. c – To unite pharmacists and maintain their rights and dignities. d – To maintain professional ethics. e – To encourage scientific research generally, and research in the field of medicines in particular. f – To secure a decent life for pharmacists and their families in times of need and old age.

Table 1.4 Aims of the Jordan Pharmaceutical Association.

Pre-Registration Requirements

The JPA defines the pharmacist as "any person holding a degree in pharmacy from an accredited university in the Kingdom, and registered in the pharmacists' register with the Association and authorised by the Ministry to practice this profession" (Jordan Pharmaceutical Association, 2013). According to the latest JPA Law No.51 of 1972, pharmacists are not allowed to practice without being registered with the JPA. The JPA requires that the applicant wishing to register should meet all of the following requirements: (1) be a Jordanian national; (2) hold a General Certificate of Secondary Education; (3) hold a degree in pharmacy from a certified educational institution; (4) have completed no less than 1440 hours of training (during or after studying at university) in a pharmacy under the supervision of a licensed pharmacist or in a manufacturing company approved by the educational institution; (5) have passed the pre-registration examination (6) have full capacity for civil conduct; and (7) have never been convicted of a felony or misdemeanour, or barred from practice or registration by any other professional body.

Pre-registration pharmacists are given temporary registration status with the JPA while they complete their training. Upon registration, pharmacists are also required to participate in an

oath ceremony, in the presence of the Health Minister and JPA Council members. To maintain their registration status, pharmacists are required to pay annual fees to the JPA.

1.3.2.3 Pharmacy Education

Initial Education

The Ministry of Higher Education (MoHE) sets educational standards for health profession higher education studies in public and private universities, as well as community colleges. Educational institutions and programmes are registered by the MoHE and accredited by the Higher Education Accreditation Council (HEAC). Since 2005, the total number of licensed pharmacy schools has doubled, bringing the total to fifteen (five of which are public, while 10 are private). All schools offer the five-year Bachelor of Pharmacy (BPharm) degree course in Pharmacy, while two of them also offer a six-year Doctor of Pharmacy (PharmD) degree. Although the BPharm is considered the main national programme, both degrees qualify as an entry requirement, and are accordingly accredited by HEAC (2015).

A non-university level route to entering the profession, the Pharmacy Assistant Bridging Programme, offers the opportunity for those who have completed a two-year (72 credit hours) Pharmacy Associate Degree/ Diploma at an offering community college, to enrol in a university-level B.Sc. Pharmacy programme. Unlike the more traditional university-level studies route, the Bridging Programme sets no minimum high-school grades as part of its admission requirements. However, it stipulates that Pharmacy Associate Degree/Diploma pass the 'Shamel Exam' – the annual comprehensive final exam for community college students – with a minimum score of 70%.

Continuing Education

There are no mandatory Continuing Education (CE) or Continuing Professional Development (CPD) requirements for pharmacists, nor are there any post-licensure re-validation mechanisms in place. CE is a mandatory requirement for pharmacists in the public sector, though not in the private sector. The public sector operates a points-based incentive scheme in which employees are rewarded for scientific work and continuing education activities.

1.4 Project Rationale

Despite the introduction of clinically-oriented educational programmes in Jordan more than 15 years ago, and the documented benefits pharmacists can have on health outcomes, clinical pharmacy is still under-developed in the country, with inadequate levels of pharmaceutical care provision and training. Indeed, although the pharmacist is recognized to be the most accessible health professional to the Jordanian public in terms of geographical proximity, their services are seldom sought beyond the act of dispensing, leaving their potential benefits on patients' health severely underutilised. There is thus considerable scope for reforming the current pharmacy sector so as to better align the workforce with both the current needs of the patients and the overall healthcare system's priorities.

In light of the epidemiological transition of the Jordanian population towards greater NCD prevalence, integrated clinical care is needed more than ever to reduce the medical, logistical and financial burden of disease. Consequently, it is particularly important to ensure the country is equipped with an appropriately-trained pharmacy workforce, one that fully meets both the needs and expectations of the population. Despite the seemingly large influx of new pharmacy graduates, and the expected future growth of the country's workforce, a national workforce strategy is yet to be introduced. Indeed, knowledge about the current pharmacy workforce remains sketchy at best.

Current inadequacies in the enforcement of dispensing laws not only point to key regulatory failures, they have produced a situation whereby pharmacists and pharmacy assistants across the country are entrusted on a daily basis, unofficially but ubiquitously, with 'prescribing' duties that vastly exceed their domain of expertise. This issue, as well as others, do not merely represent lapses in professional standards; they are ominous warnings of serious public health and safety concerns. Indeed, pharmacy in Jordan, for the past two decades, has been stunted in its development, failing to respond to the sector's remarkable expansion with the requisite regulatory, cultural and institutional evolutions.

In this light, this project aims to provide a set of empirical and conceptual tools that can help inform, shape and guide the development of the pharmacy profession, workforce and education in Jordan. Through providing guidance for the strengthening of pharmacy workforce capacities in Jordan, this project is ultimately aimed at strengthening the capacity of health professionals. It takes the pharmacy profession as an example and seeks to provide a reference framework for policymakers, researchers and stakeholders looking to initiate health-related capacity development drives; as well as offer guidance for the strengthening of pharmacy workforce capacities.

1.5 Project Aim

This project aims to inform and provide guidance for ongoing policy and governance efforts and initiatives aimed at developing the capacity of pharmacists in Jordan.

1.6 Project Objectives

In order to successfully fulfil its stated aim, this project will seek to achieve the following four principal objectives:

1. To identify challenges hindering the advancement of the pharmacy profession in Jordan and, consequently, determine the appropriate approaches for addressing them.
2. To investigate the current configuration and overall trends of the Jordanian pharmacy workforce, in order to assess the quality of current workforce intelligence.
3. To examine the state of pharmacy education, and explore the academic and institutional capacities offered by Jordan's pharmacy schools.
4. To evaluate Jordanian graduates' preparedness for practice and identify key skill and competency gaps.

1.7 Thesis Organization

In order to achieve the project's above-stated aim and objectives, the following structure of the thesis, presented in Figure 1.4 below, was adopted.

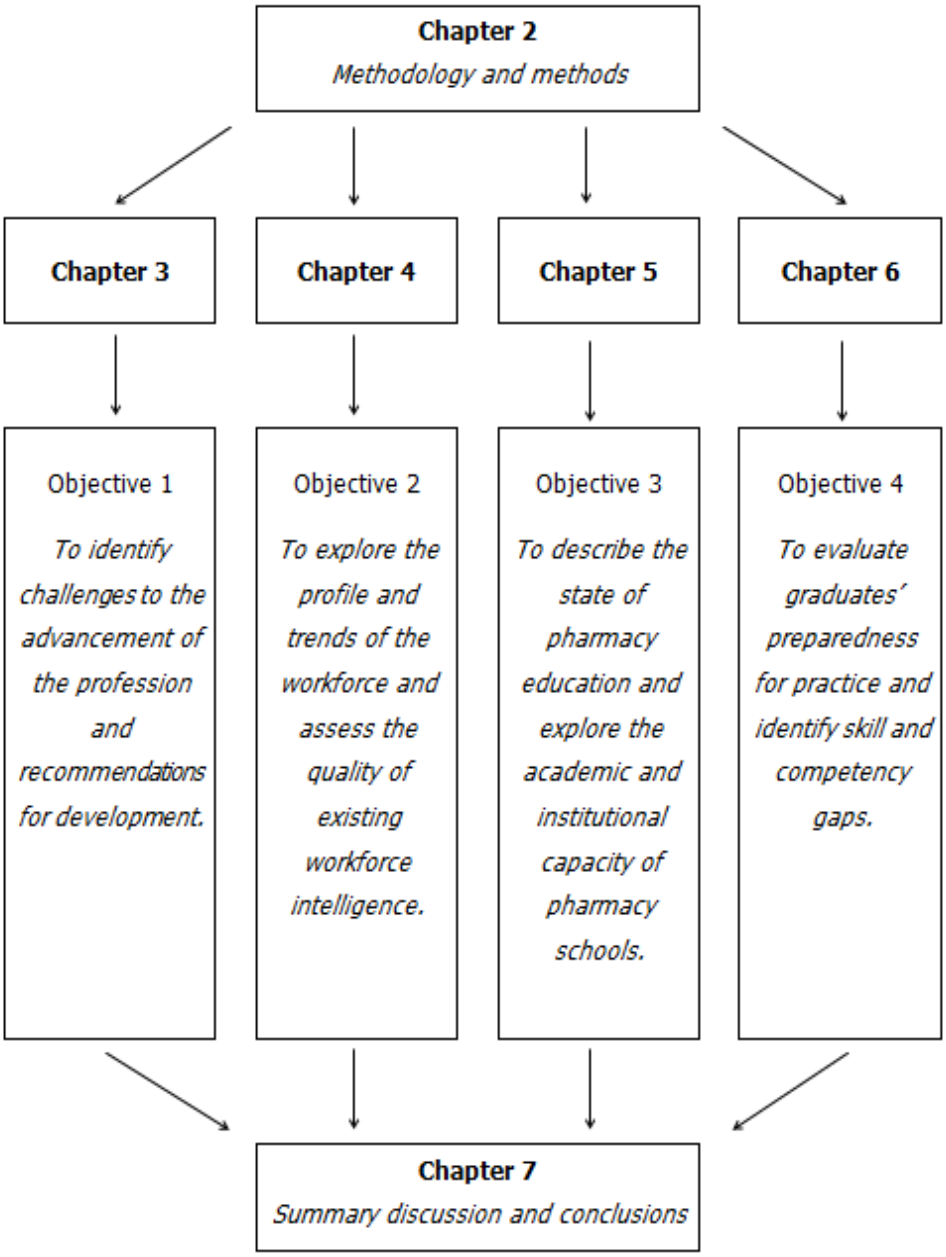


Figure 1.4 Thesis organization.

Chapter 2 Methodology and Methods

2.1 Methodological Issues

2.1.1 General Design

In order to achieve the aim and objectives of this project, four separate studies were conducted. Figure 2.1 below summarises the aim and research question for each of the four studies. An exploratory mixed-methods approach was employed so as to allow for the triangulation of data from different sources. A set of qualitative (interviews, focus groups, and documentary materials) and quantitative methods (database analysis and institutional surveys) were both used in the undertaking of all four studies.

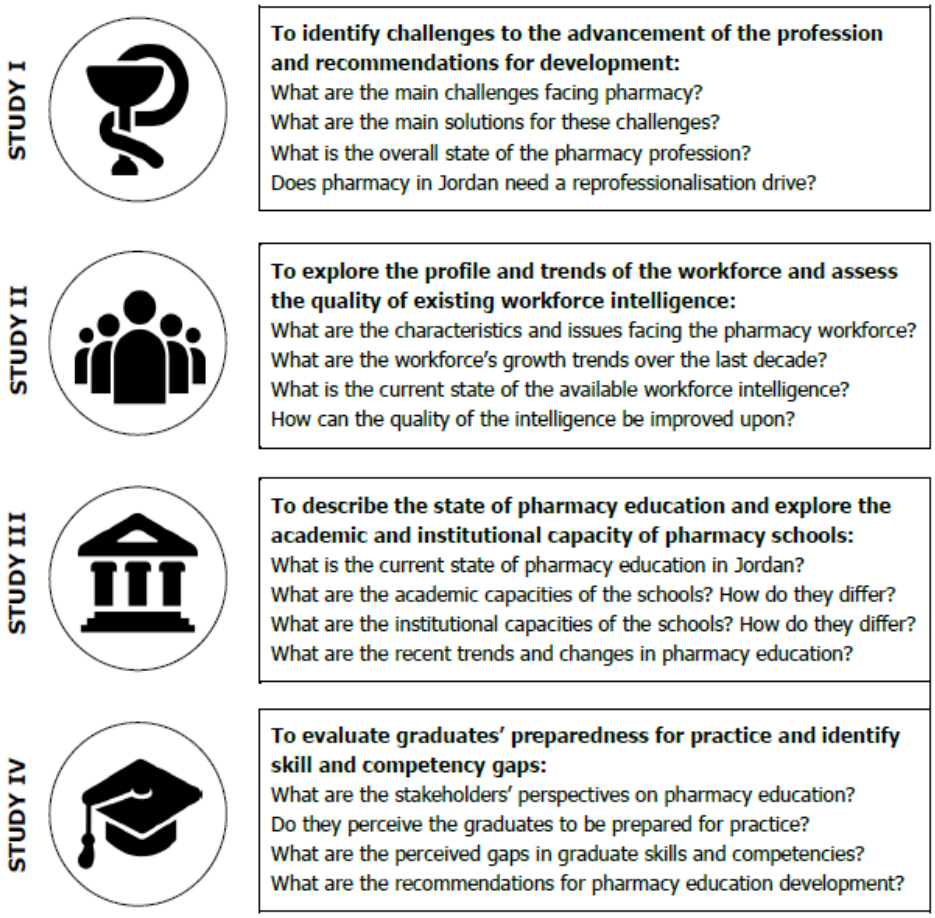


Figure 2.1 Study aims and research questions.

2.1.2 Why Mixed Methods?

Mixed-methods research is defined as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson and Onwuegbuzie, 2004). As such, mixed-methods research seeks to maximise the strengths and minimise the weaknesses of qualitative and quantitative methods. Mixing methods presents a number of advantages compared to single-method studies. These include providing stronger inferences from the different sources and presenting opportunities for a wider diversity of views (Tashakkori and Teddlie, 2003). One of the conceptual strengths of mixed methods research is that the inherent methodological integration they involve offers a more holistic account of the research topic, thereby leading to richer understandings of the investigated phenomena (Day et al., 2008). Mixed-methods research is considered an especially valuable tool in social pharmacy research (Aronson, 2005), as the research questions in the fields of social and administrative pharmacy are usually not exclusively qualitative or quantitative. They are also usually multi-layered, as evident in the research questions of this project.

One intrinsic advantage of mixing and combining methods is that it allows for greater validation through increasing consistency, depth and scope (Flick, 2002). The multiple-methods approach is usually described as one of convergent validation, or 'triangulation' (Webb et al., 1966). Mixing methods provides an opportunity for methodological triangulation through establishing associations between and within different data types. Denzin (1978) defines triangulation as "the combination of methodologies in the study of the same phenomenon". According to Bryman (2008), triangulation is "the use of more than one method or source of data in the study of a social phenomenon so that findings may be cross-checked". Historically, the term 'triangulation' originates in military and navigation strategies and involves the use of "multiple reference points to locate an object's exact position" - a definition concurrent with that of geometrical triangulation, in which multiple viewpoints allow for greater accuracy (Smith, 1975). Some claim that one of the advantages of triangulation offered by a mixed-methods approach is that the weaknesses of any particular single method are "compensated for by the counter-

balancing strengths of another" (Hussein, 2009). Jick (1979) concurs with this, asserting that triangulation tends to neutralise single-method liabilities and exploit the benefits of combining assets.

2.1.3 Research Rigour

An important feature of a mixed-methods approach is that it increases the validity and reliability of the research process. In this regard, the present project and its four component studies have deployed various approaches and tools to maximise the reliability and validity of the results. These will be explored in more detail in the individual study chapters, but a few examples are listed here. Where there are weaknesses in the validity and/or reliability of results, these are clearly acknowledged and highlighted in the 'Study Strengths and Limitations' section of each study chapter.

In particular, validity can be observed in the meaningfulness of the measurements, as well as the suitability of the chosen measurement methods in answering the desired research question. As such, a number of techniques that increase transactional and transformational validity have thus been designed and adopted in this project (Cho and Trent, 2006):

Transactional validity is a type of validity measure that involves the interaction between the researcher, the research and the collected data. Examples include 'member checking' or 'participant validation' (described in Study I).

Transformational validity, meanwhile, is concerned with minimising the interference of researcher subjectivity with data interpretation. An example of this is the use of self-reflection exercises after the interviews.

Reliability is concerned with the consistency of measurements, i.e. the extent to which repeating the measurements under different conditions (e.g. different researchers) will produce the same findings. Multiple-coding during analysis and back-translation of interview texts are techniques used in this project to ensure inter-rater reliability.

2.1.4 Epistemological Considerations

As a pharmacist, I come from, or rather have been raised in, a strongly –if not strictly- positivistic tradition. Therefore, when I found myself embarking on a research project that is social in nature, existing intellectual pre-conceptions had to be reconfigured so as to better serve the new purpose. In adopting a mixed-methods strategy for my doctoral research, I had inadvertently stepped into disputed territory that has been claimed and reclaimed by competing ideologies and paradigms. In the present context, a 'paradigm' refers to a set of common parameters shared among researchers on what is scientifically valid and on how problems should be understood (Thompson, 2012).

Proponents of the positivist philosophy tradition, also known as quantitative purists, believe that the researcher and the researched are independent of one another, and that social science research should remain objective. For their part, qualitative purists (also known as interpretivists or constructivists) reject positivism, and argue that the researcher and the researched cannot be separated because of the impossibility of context-free realities (Bryman, 1984). However, both schools of thoughts agree that qualitative and quantitative methods are incompatible with each other, and therefore cannot be mixed (Johnson and Onwuegbuzie, 2004, Youngs and Piggot-Irvine, 2012). Howe (1988) criticises this 'incompatibility thesis' and argues that there is no incompatibility in mixing methods in practice (research design) or epistemology (nature of knowledge).

Post-positivism accepts that the theories, background, knowledge and values of the researcher can influence what is observed. However, similarly to positivists, post-positivists pursue objectivity by recognising the possible effects of biases. As such, post-positivist research is predominantly comprised of quantitative methods; and qualitative tools are a minor component of the general design.

A pragmatic paradigm is less concerned with the qualitative/quantitative count and relies instead on approaches that produce pragmatic solutions. As such, pragmatism may be considered to sit midway across a continuum ranging from post-positivism to constructivism

(Table 2.1) (Youngs and Piggot-Irvine, 2012). For pragmatic purposes, researchers move beyond technical epistemological questions about mixing or combining research techniques.

Being a problem- and solution-centric school of thought, pragmatism complements the underlying developmental goal of this research project. With pragmatism as a guiding paradigm, researchers enjoy a great deal of flexibility when it comes to choosing methods and techniques. This is particularly advantageous when the research process does not go according to plan, and the research team has to respond to unexpected opportunities. Pragmatism is widely seen as synonymous with the mixed-methods approach, and is considered the latter's complementary philosophical partner (Johnson and Onwuegbuzie, 2004). In advocating the "pragmatic approach" as a new guiding paradigm for mixing methods, Morgan (2007) reminds us of the Pragmatist tradition of "the ends justify the means", which rejects the idea of an interpretivist-positivist divide in favour of promoting a pluralistic, holistic, outcome-based and problem-centred approach.

For his part, Howe (2004) sketches the concept of "mixed-methods interpretivism" as an alternative to the dominant "mixed-methods experimentalism", according to which the qualitative component is usually assigned an auxiliary role, pointing out that mixed-methods research can, and should, be employed to serve either master narrative. In this project, the master narrative will be interpretivistic in nature, where "quantitative methods play an auxiliary role in an overarching interpretivist-qualitative framework" (Howe, 2004). The dominance of the qualitative element in this project could thus eliminate post-positivism (traditionally quantitative-dominant) as a route of epistemology. Despite the thin distinctions between some paradigms –in this case, between post-positivism and pragmatism – pragmatism could be considered the leading paradigm guiding this research project.

	Positivism	Post-positivism	Pragmatism	Constructivism
Ontology *nature of reality*	Objective, single reality, naïve realism	Acknowledges subjectivity; critical realism	Both objective and subjective points of view; accept views of reality that best serve research goals.	Subjective, relativism
Epistemology *nature of knowledge of that reality*	Research and researched are separated (dualism).	Modified dualism; truth can be reached without separating research and researched.	Any way of knowing that leads to pragmatic solutions.	Research and researched are inseparable.
Methodology *tools to know that reality*	Quantitative	Primarily quantitative	Mixed methods	Qualitative

Table 2.1 Selected research paradigms.

2.1.5 Researcher Subjectivity

2.1.5.1 Acknowledging my intentions

At the outset of this project, an important question to address is: To what extent, and how, should researcher subjectivity be marshalled in 'pragmatic' mixed-methods research? The answer understandably varies from one setting to another. Unsurprisingly, methodologists have also expressed their unease about the possibility of a definitive answer. For instance, some qualitative researchers suggest that subjectivity ought to be kept at an absolute minimum through strict adherence to the text being analysed, thereby establishing a clear connection between qualitative and quantitative research through a search for objectivity and a near-positivist perspective. On the other hand, researchers insist that the use of subjectivity, and drawing upon one's inner experience, can lead to a better understanding of the subject of study (Drapeau, 2002). I myself agree with the latter perspective and so find relief in Giorgi's (1994)

assertion that "nothing can be accomplished without subjectivity, so its elimination is not the solution. Rather, how the subject is present is what matters and objectivity itself is an achievement of subjectivity".

In this context, in order to interpret text, it is necessary to make one's own situation transparent so that one can appreciate the 'otherness' of the text, so long as one does not allow his or her own prejudices to dominate the text. Therefore, as 'all knowledge is relative to the knower' within a subjective epistemological view, measures must be taken to avoid the potential bias that might result from the intimate proximity between the researcher and the researched and, as such, the use of self-reflection is advised.

In light of the above, I therefore seek to establish a reflective "fore-grounding" of my own fore-structure (Grondin, 1994). It is my contention that- in opposition to philosopher Edmund Husserl's concept of 'bracketing'- completely eliminating the presuppositions that pre-structure and direct interpretive inquiry is neither possible nor desirable. Instead, I believe these should be made explicit to the greatest possible extent (LeVasseur, 2003). Of course, once adequately fore-grounded, the 'interpretively' developed fore-structure ought to be positively engaged with the process of interpretation. Not unaffected by my positivist background (or past), I would nonetheless not like for any potential subjectivity to act as an obstacle in the way of truth, which could lead to valuable findings being unduly discarded. After all, producing sound and reliable knowledge of the social world is the aim, and duty, of any responsible researcher.

Ironically, this leads me to believe that subjectivity should not only be reflected but also explored as much, and as frequently, as possible throughout the research process. This is not to advocate or adopt Drapeu's (2002) extreme advice on undertaking "introspective work through a personal psychoanalysis or psychotherapy" (though such measures may prove more relevant to researchers involved in delicate topics, such as mental health).

2.1.5.2 Operation "fore-grounding"

In this section I will briefly list a few facts (and disclaimers) that will set the scene. My research is not funded (either wholly or in part) by any official organisation or agency, though it is

theoretically linked to, and is conducted in collaboration with, the International Pharmaceutical Federation's (FIP) Education Initiative, which promotes worldwide development of pharmacy education. This association, and the effects thereof, will be revisited in the Professional Standpoint section.

I have obtained my pharmacy degree from a UK university and have never practiced as a pharmacist in the Middle East. Although I am a Jordanian national, I was born and raised in Saudi Arabia- a neighbouring country. Being of Palestinian origin, I share this with at least half of the Jordanian population (Reiter, 2004). Arabic is my native language and, in addition to classical Arabic, I speak its Jordanian dialect fluently. Clearly, my background contains a multitude of underlying complexities, which I will attempt to articulate, explore and dissect in the following section.

2.1.5.3 Language and Culture

The centrality of 'language' in research cannot be underestimated, especially its role in shaping numerous technical and methodological aspects of design, analysis and theory induction. Research implications associated with 'language' may include, though are not restricted to, transcription, translation and interpretation. As such, and in addition to the hermeneutic interpretation of 'text', further horizons of understanding are possible, notably our understanding of words and language (Gadamer, 1989). Although sharing a common language implies significant agreements on words, nuances, and linguistics for dialogue, this cannot be relied upon to identify a single, correct interpretation (Bjork Bramberg and Dahlberg, 2013), perhaps because no single, correct interpretation of any text is ever possible.

According to Rennie (2000), a shared language and customs allow the researcher to understand much of what the participant conveys. Taylor (1989) states that this could come in handy when the experience is "inchoate" for the person experiencing it, and who might thus find it difficult to articulate. In this circumstance, the "Other" (i.e. researcher) may be helpful as an aid to the articulation. Understanding how a person speaks of an experience is about interpretation as much as it is about an immediate grasp of meaning–which Merleau-Ponty (1995) termed

'intentionality'). This 'grasp of meaning' is of particular importance when a dialect is involved. In the Middle East, although classical Arabic is the common official language, each country or region uses a particular dialect in everyday (unofficial) conversation, which includes words and phrases that can sometimes only be properly 'understood' by a speaker of the same dialect.

As with language, culture is shared. Sharing a culture implies understanding customs, behaviours, history, and attitudes - all of which contribute to better understanding and, hence, interpretation. Sharing cultures is an appropriate example of Giorgi's claim that "objectivity itself is an achievement of subjectivity". For instance, if a British national were to conduct my research, some obvious cultural barriers may unnecessarily exacerbate the researcher's subjectivities rather than attenuate them. Therefore, to share complex social phenomena is to erase, or reduce, their complexities.

2.1.5.4 Professional Standpoint

In the first instance, the philosophical underpinnings of my professional standpoint (being a pharmacist researching pharmacy, and a pharmacist researching education) seem to have little association with the hermeneutics of interviewing – or, at least, not directly. However, several dimensions affect the state of my 'pre-understandings' and thus interpretive abilities. One is my educational background. I have not studied in any of the universities I am about to research and, therefore, have had few presuppositions or opinions about them. Having said that, and being a graduate of a top UK pharmacy school, I cannot dismiss the fact that I may consider myself to have received a 'better' education than the one being provided in the educational institutions and contexts I am due to investigate. Whether this will have a hidden effect, for instance leading me unintentionally to search for 'flaws' in a 'less-than' setting is unknown, though arguably unlikely.

Secondly, I am a pharmacist researching pharmacy but also researching education. There are frequent calls for social research, in particular in substantive areas, to serve the needs of the professionals who work in them. In this case, two professionals co-exist: the educationalist and the pharmacist. It is sometimes argued that, first and foremost, educational research ought to

contribute to the process of education, and this is interpreted as being achieved by inquiry that is structured to facilitate the work of teachers or of educational managers (Hammersley, 2000). With this in mind, and although my shared profession is an asset, my lack of expertise in education may have hindered my understanding and, potentially, interpretation of the teachers and educational managers I have interviewed.

2.1.5.5 Developmental Orthodoxy: Being agenda-free

This section will briefly address the effects of my project's association with the International Pharmaceutical Federation Education Initiative (FIPEd). It is important here to reiterate the absence of a pecuniary or financial dimension to my relationship with this organisation or others. This is to eliminate any potentially questionable agenda-driven or politically-influenced 'development' objectives that are sometimes associated with foreign agencies and organisations. In fact, FIPEd promotes development with respect to local and regional needs. Therefore, even though I find myself intrinsically linked with the developmental discourse, I am in no way pursuing a particular institutional agenda of any kind.

My self-reflection does not end here. Rather, it is a continuous process that a researcher must engage in while, at the same time, acknowledging that this does not necessarily imply that presuppositions are automatically understood simply by virtue of being declared. On the contrary, the hermeneutic criticality lies in the "effort to avoid self-misunderstandings as far as possible"; as such, because we may misunderstand ourselves, efforts of understanding must be "appropriated, strengthened and secured" (Grondin, 1994). The continuous practicing of self-reflection is therefore a highlight of the data collection phase, as will be shown in the upcoming sections.

2.1.6 Translation Considerations

Research involving cross-language translation — where acts of translation between languages occur at any stage — is a complex and multi-faceted issue carrying with it methodological, epistemological and logistical implications. Nevertheless, however complicated, discussing cross-language differences should not be confined to anthropologists or sociolinguists. Rather, as

Temple and Young (2004) rightly point out, the issue should be placed at the heart of social science rather than being treated as merely "a matter of methodological note".

Nowadays, it is not uncommon for the researcher's competence to be a reflection of the way he or she consistently or inconsistently manages cross-language issues. In fact, some researchers reserve the right to question the trustworthiness and rigour of studies (involving cross-language elements) that hadn't systematically addressed in considerable detail, for instance, the methodological issues surrounding their use of translators (Mill and Ogilvie, 2003). Allison Squires (2009) went further in stressing this point by coining the term "cross-language trustworthiness", a descriptor for a researcher who "systematically accounts for factors that would compromise the credibility, transferability, dependability, and confirmability of translated data".

In that same paper, Squires (2009) synthesises methodological recommendations from 40 purposively selected cross-language qualitative studies of health science and nursing background, producing a set of 14 criteria (Appendix I) to be used as an evaluation tool for how researchers manage the language barriers between themselves and their participants. The 40 studies were then tested using the criteria, resulting in only six (6) studies meeting all of the recommended criteria. As such, the remaining 34 studies demonstrated multiple disadvantages mapped across the criteria's four overarching themes: conceptual equivalence, translator credentials, translator role, and methods. Some of these disadvantages included not pilot-testing interview guides, not specifying the participant's dialect or origin, not indicating which language the coding process was conducted in, and many others. In her review, the US-based author concludes that the criteria "may provide useful guidelines for evaluating cross-language research and for novice cross-language researchers designing their first studies".

As a 'novice' researcher embarking upon a research project which will no doubt be classified as cross-language, Squires's criteria will be used as a benchmark for the cross-language elements of my methods, as a guide to designing a solid theoretical and methodological foundation for analysing my future translated data. It is worth noting at the outset that I grew up as an

Arabic/English bilingual speaker. The Arabic language is spoken in different dialects (or slang) regionally and nationally, which all nevertheless share one 'formal' or 'classical' written form. In other words, unless a dialect contains European components (e.g. French in North African countries), all Arabic speakers understand most Arabic dialects.

Squires (2009) insists that researchers provide a rationale for translating to English, even though the reasons may seem obvious to the reader. However, for the sake of transparency, I will list a few reasons. Although I am bilingual, my supervisors are not, and for them to be able to be involved in my project, interview transcripts must be translated before they are analysed and coded. Additionally, for my work to be potentially published, widely circulated and searched for in literature databases, it is almost imperative that it be in English. This is in addition to the fact that I am undertaking this project for a research degree at a UK-based University, where it is expected that my research findings, in the form of this thesis, be submitted in the English language. A third reason, mentioned also by Croot et al. (2011), is that translating to English is the 'pragmatic choice'. This is especially true in a technical sense; where computer-assisted qualitative data analysis programmes (e.g. NVivo) are used to analyse and code data in a collaborative manner among research team members.

Temple and Young refer to the researcher's 'socio-cultural positioning' as being an indicator of his or her dual role as a translator. They draw particular attention to the issue of 'racial matching', where the researcher's race and ethnicity plays an important role in drawing researcher insider/outsider boundaries. Twine (2000), however, challenges this notion by questioning the degree of 'insiderness' with which language nativity is sometimes automatically associated, claiming that language difference can be a stimulator as well as a block to communication. Temple and Young also point out that not only is it rare for a researcher to be fluent in the language of his or her participants, but it offers opportunities not available to others. As a fluent Arabic speaker, I may therefore feel I have an advantage, as far as research methods are concerned, over other researchers in cross-language studies who do not possess a mastery of the language. Having said that, Temple (2006) proposes that the largely 'unquestioned' role of the bilingual researcher should be addressed, especially the way they

construct accounts in light of their own epistemological perspectives. In support of achieving conceptual equivalence, Squires attests that the researcher's profession plays a crucial role. This is especially relevant in healthcare language where some words or phrases may not exist in another language (Frederickson et al., 2005). As a pharmacist who interviewed others in the same profession, this is considered an advantage.

2.1.7 Data Collection Timeline

The data of this project were collected in two main phases. The first phase was conducted between September 2013 and April 2014, and consisted of the stakeholder interviews and registration database extraction. The second phase, which included follow-up focus groups and institutional surveys, took place between April and June of 2015. Documentary materials were collected throughout the course of the project whenever relevant documents became available. The table in Appendix II provides an overview of this research project's four-year timeline.

2.1.8 Ethical and Safety Concerns

Ethical clearance was sought and obtained from the School of Education's Ethics Committee at the University of Nottingham prior to data collection. Ethical approval was sought from the School of Education for two main reasons: (1) the scope of the project was at the outset primarily educational; and (2) our project did not carry any risks to patients or the public and so a health-related Ethics Committee was not needed. The Research Ethics Approval Form is attached in Appendix III. In Jordan, a national ethics committee, from which permission is needed to conduct research, is yet to be established. Ethical clearance was thus not required. In accordance with the University of Nottingham's Code of Research Conduct and Ethics, a lone working policy was set up in liaison with the School of Pharmacy's Health and Safety Officer who has a policy system dedicated for researchers planning to conduct their fieldwork abroad. The policy provides guidance for researchers working off-campus without direct supervision.

2.2 Methods Overview

In its format, this dissertation resembles a compilation thesis or a thesis-by-publication. Unlike traditional formats, a compilation thesis consists of standalone findings chapters that are laid out in a journal article format with their own introduction and literature review, methods, results, discussion and conclusion sections. While the principal objectives of this study eventually triangulates to inform the overall aim of the project, each objective takes its own shape in terms of its specific rationale, research questions, methods collection and analysis approaches and distinct findings. This section gives a very brief overview of the methods used, while Section 2.3 ('Thesis at a glance') provides a one-page summation of the key features of each study. This is intended to facilitate the reader's ability to explore and navigate the individual study chapters, as well as the thesis as a whole.

2.2.1 Study I

This is multimethod qualitative study comprised of interviews and focus groups. This study also proposes a novel conceptual framework for pharmacy that is intended to be used as an analytical and explanatory tool for the advancement of the profession. Semi-structured interviews with a purposively recruited cross-sector sample of 53 key informants, stakeholders and pharmacists were used to explore and identify the challenges facing the profession. Follow-up focus groups were subsequently conducted with the original participants, with a view to validate the interview findings, map them against the conceptual framework and discuss recommendations for development.

2.2.2 Study II

This is a descriptive quantitative study that uses the JPA's register of pharmacists. This study was not part of the initial plan of the PhD. However, during my first field visit to Jordan, I was unexpectedly offered unlimited access to the registration data by the JPA. Data spanning the past ten years were extracted from the register, cleaned and analysed. Simple descriptive and time-series statistical analysis was used to explore the characteristics, trends and problems of the workforce.

2.2.3 Study III

This is a mixed-methods study that uses surveys and documentary materials. A national institutional survey was used to both collect information and, concurrently, to provide a baseline snapshot of pharmacy education. Following a triangulation approach, multiple sources were used to complete the survey. The analysis was supplemented with official educational documentary materials, also collected from multiple sources.

2.2.4 Study IV

A secondary analysis of the 53 interview transcripts was carried out. Qualitative content analysis was performed on the primary qualitative datasets. The analysis adopted the FIP's Global Competency Framework as its coding framework.

2.2.5 Thesis At a Glance

STUDY I Pharmacy profession: challenges and opportunities	**STUDY II Pharmacy workforce: profile, trends and intelligence**
Objective: To identify challenges to the advancement of the profession and recommendations for development. **Methods:** 53 semi-structured interviews were conducted, followed by 2 participant validation focus groups with 13 participants. **Key findings:** A new conceptual framework for pharmacy is proposed. A total of eight validated challenge areas were identified. The framework was used to understand the primary source of challenges, and a list of list of recommendations addressing each of the challenges was also devised.	**Objective:** To explore the profile and trends of the workforce and assess the quality of existing workforce intelligence. **Methods:** Workforce data were extracted from the JPA's register and descriptive and time-series statistical analysis was performed. **Key findings:** The pharmacy workforce has almost doubled in size between 2005 and 2014. The workforce exhibits classic problems of imbalance across gender, geography and sectors. The identified limitations in the current workforce intelligence presents challenges to effective workforce planning drives.
STUDY III Pharmacy education: academic and institutional capacities	**STUDY IV Pharmacy education: graduates preparedness for practice**
Objective: To describe the state of pharmacy education and explore the academic and institutional capacity of pharmacy schools. **Methods:** Multiple data sources were used to complete survey data on all 15 pharmacy schools. Supporting documents were collected. **Key findings:** Pharmacy education in Jordan is undergoing a transition. The post-2010 era witnessed a surge in the number of pharmacy schools, from 8 to 14. It also witnessed the introduction of new specialized BPharm tracks as well as professional training diplomas.	**Objective:** To evaluate graduates' preparedness for practice and identify skill and competency gaps. **Methods:** A secondary qualitative content analysis was carried out on 53 interview datasets using the Global Competency Framework (GbCF) as the coding frame. **Key findings:** Performance gaps were identified across the GbCF's four domains, with Organisation and Management being the most coded domain. Six of the GbCF's behaviours were adjusted and ten new behaviours were developed.

Chapter 3 STUDY I The Profession: Challenges and Opportunities



3.1 Introduction

Sociological theorists have long been interested in the theory of professions and what distinguishes them from other occupations. According to an early idealistic 'normative' approach to defining a profession, values and ethical codes give the professions their key stabilising function in society (Parsons, 1939, Carr-Saunders and Wilson, 1933); but this categorization of an occupation – largely based on unsubstantiated privilege granted by society – was not deemed a sufficient measure for discriminating between occupations (Moran and Wood, 1993, Saks, 1998). The argument was therefore further expanded by the 'trait' approach to include, in addition to a code of ethics, a combined range of defining characteristics or traits (e.g. self-regulation, training, licensing, examinations, and professional associations) (Johnson, 1972, Wilding, 1982); the varied interpretations of the trait approach and its arbitrarily set lists of criteria explain its failure to produce a consensus (Saks, 1998). Interactionist views, on the other hand, examine the dynamics of professionalism as a form of service provision rather than a set of traits; this 'occupational control' approach argues that professionals deploy exclusive services to exert market control over their occupation (Freidson, 1989, Brante, 1988, Moran and Wood, 1993). Freidson (1970)proposed that in addition to this occupational control or 'dominance', 'autonomy'– or the ability to control one's work activities – is also needed to give professional power to an occupational group. Sceptics, however, attribute the narrowing of knowledge gaps and the rise of new and highly-specialised occupations to the decline of these professional powers (Haug, 1972, Toren, 1975). Within the theories of professions, there

appears to be no unified holistic approach to what constitutes the professionalization of an occupation – or the process of it becoming a profession.

3.1.1 Professionalization and Pharmacy

Throughout these ongoing disagreements, debates and theoretical evolutions, the profession of medicine – firmly rooted in the historic Hippocratic Oath – has always been "the example of choice when sociological theories about the professions were discussed" (Traulsen and Bissel, 2004). As the division of healthcare labour progressed, the professionalization of pharmacy and other healthcare occupations began to increasingly feature in such discussions (Wilensky, 1964, Hepler, 1985, Moran and Wood, 1993). The story of the professionalization of pharmacists is set within the evolutionary stages of pharmacy practice models. Manufacturing, compounding and distributing medicines were key features of practice in the 19th century; the establishment of sale and supply restriction laws, pharmacy schools and representative associations across Europe, the U.S and Asia signalled the start of professional regulation, official representation, and organized education of pharmacy (University College London School of Pharmacy, 2012). The large loss of pharmacists' manufacturing and compounding roles to the advent of the 20th century pharmaceutical industry was coupled with the consequential loss of their social purpose as compounders and distributers; hospital pharmacists had more varied activities but as in community practice, the emphasis shifted to the 'product' (Holland and Nimmo, 1999). These events coincided with pharmacy beginning to feature in discussions- albeit with negative connotations- on sociological theories of the professions.

Despite pharmacists gaining occupational control over their service through preventing the unqualified from dispensing medicines, the pharmacy profession has historically been considered subordinate to the medical profession and its professional status has often been questioned. In his 1964 essay, 'The Professionalization of Everyone?', Wilensky critically examines the "heroic struggles" of some occupations to join the rank of "clearly recognized and organised" professions and describes pharmacy as a "borderline" profession ancillary to medicine (1964). Medical sociologists Denzin and Mettlin similarly argued for the "incomplete professionalization" of pharmacists and partly owed their allegedly failed "attempt to turn

themselves from ordinary occupations into the prestigious groupings called professions" because of their lack of control on medicine, their social object (1968). Freidson (1970) also agreed by concluding that pharmacy is "firmly subordinated to medicine" due to the inability of pharmacists to diagnose diseases and prescribe medicines, which compromises their professional 'autonomy' according to him. However, the provision of drug information and medication counselling by community pharmacists and the addition of clinical pharmacy to hospital settings would eventually redefine the essence of practice and somewhat neutralise the negative effects of the manufacturing industry (Holland and Nimmo, 1999). These developments formed the backdrop to the introduction of Hepler and Strand's (1990) concept of pharmaceutical care. Shortly after, Dingwall and Wilson (1995) firmly reject Denzin and Mettlin's claims, counter-arguing that pharmacy's social object is not the medicine itself but rather its median role for social change. Despite these developments, the 'quasi'-status of pharmacy as a profession – as defined by the traditional sense of the word – still holds in contemporary literature (Edmunds and Calnan, 2001, Bush et al., 2009).

3.1.2 Towards a New Approach

The field of health professions is not static and shifts continuously as healthcare systems and the role of healthcare professionals develop and adapt over time; and many of the assumptions underlying the traditional professions theories do not survive the dynamic climate of healthcare (Saks, 1998). Pharmacists are continuously faced with increasingly demanding and complex healthcare needs and advancing technologies, forcing them to constantly re-evaluate their current practice models and envision future ones (McDonald et al., 2010). According to Birenbaum (1982), these continuous efforts to upgrade and develop the status of pharmacy within changing healthcare environments is referred to as reprofessionalization. Reform drives in the name of reprofessionalization have become a recurring feature of literature; the topic is examined through several lenses such as extending practice roles (Gilbert, 1998, Edmunds and Calnan, 2001, Awalom et al., 2015), advancing educational models (Birenbaum et al., 1987, Babar et al., 2013, Gallagher and Gallagher, 2010), and reviewing existing regulatory systems (Williams, 2007, Wafula et al., 2014). Birenbaum (1982) concedes that theoretical frameworks

"fail to recognize the interactive and contextual nature of the development of the professions". According to Annandale (2014), the relationship between theory and research is also reciprocal where "extant theories gradually fall out of fit with societies as they change and new approaches are called for". This presents a structural problem for research aiming to identify challenges affecting the advancement of a profession and to assess if it's time to reprofessionalize an occupation, without relying on or associating with ephemeral definitions that supposedly determine its professionalization. This study presents an alternative approach to the traditional theories of the professions and professionalization. It describes a simple conceptual framework that redefines what constitutes a professional arena and employs it in a case study conducted on pharmacy in Jordan.

3.1.3 The Conceptual Framework

The conceptual framework describes that in any professional arena, there is a dynamic and complex interplay between the education, regulation and practice sectors. The framework was developed by Michael J. Rouse in the early 2000's as a result of his work with the Accreditation Council for Pharmacy Education (ACPE), the U.S. national accreditation agency for pharmacy education. The conceptual framework, used widely in presentations, was intended to depict the separation of the entities responsible for education, practice and regulation, but at the same time the dynamic relationships that exist between the sectors, working in collaboration to advance the profession. It was first published in Version 1 of the Global Framework for Quality Assurance of Pharmacy Education – adopted by the FIP in 2008. Figure 3.1 illustrates the relationship between the three principal components of the framework. 'Practice' refers to the sector of the profession that provides a broad range of services to society in and from a variety of settings. 'Regulation' refers to the sector – within and/or outside the profession – that determines and enforces the statutory requirements for the organization and practice of pharmacy. 'Education' refers to the sector of the profession that prepares the members of the pharmacy workforce for practice; i.e. both pre-service education and CE/CPD.

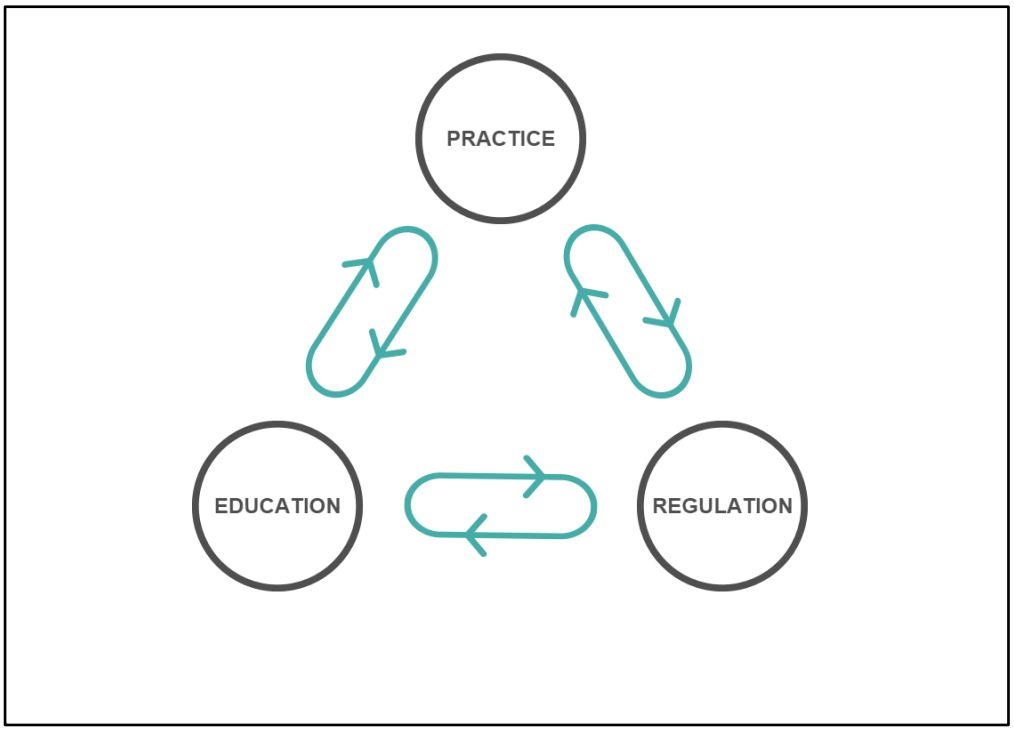


Figure 3.1 A conceptual framework depicting the dynamic relationships between practice, regulation and education.
(International Pharmaceutical Federation 2014, adapted with permission)

The framework depicts that there should exist a dynamic relationship between its components or sectors – even a 'tension'– constantly driving change and advancement. The separation also provides for 'checks and balances' whereby a 'push' from one side can be checked (even opposed) by the other sector, with some positioning back and forth until something that works in the best interests of the profession and the public becomes the agreed 'end point'. The possible negative impact of a lack of separation (the absence of checks and balances) between these three sectors may lead to stagnation or conflict-of-interest; 'self-regulation', for example, can be used to illustrate this effect and will be discussed in this study. At the same time, however, it is important to ensure that at no stage do any of the separations depicted get too wide, thereby creating a disconnect, which may lead to dissatisfaction or frustration. If, for example, pharmacy educators teach for a model that is not supported by practitioners and/or regulators, graduates may become disillusioned if the practice or regulatory environment does not allow them to practice in the manner conveyed by the academic programme. Developments

and innovations in any of these professional domains may lead, drive or require an appropriately measured response from another, but there must always be that dynamic interplay of 'checks and balances'. Failure to make needed changes by one sector can – and should be – challenged by the other sectors in the profession. For example, changes in practice needs may force appropriate changes to be made in education, and new regulations will impose new effects on the practice environment. A proper push-pull fit between these professional domains is crucial to not only maintaining the integrity of the profession, but to also advancing it. Similarly, any disconnect between them destabilises their harmony and may prove, to varying degrees, detrimental to the overall state of the profession. Existing challenges hindering the advancement of a profession may also be better understood by tracing them back to their corresponding 'disconnected' axes; for instance, noncompliance to dispensing laws can be traced to a primary disconnect between 'regulation' and 'practice' owed to the weak implementation of dispensing regulations in community practice. This additional diagnostic or formative feature of the framework allows it to be a practical analytical tool in policy-relevant prescriptive studies.

3.2 Study Rationale

The present study is the first attempt at filling the gaps by identifying the key challenges that are currently hampering the advancement of the pharmacy profession in Jordan. Using Jordan as a case study, the conceptual framework was incorporated into the study's design and analysis to examine its value as an explanatory and formative tool for understanding the uncovered challenges and devising needs-based strategies to address them. The experiences from this multi-method participant-centric research approach were used to discuss the framework's benefits and implications for reprofessionalization drives by researchers and stakeholders.

3.3 Methods

3.3.1 Study Design and Setting

Qualitative research serves to develop concepts in an effort to understand social phenomena (Pope and Mays, 1995). It is used to explore "meanings of social phenomena as experienced by individuals themselves, in their natural context" (Malterud, 2001). Qualitative research methods is a systemic process of collecting, organising, and interpreting text derived from interviews, discussions, observations, documents or visual materials (Hennink et al., 2010). Qualitative research generates rich information and is ideally suited for exploratory studies of under-researched topics such as this one (Mason, 1996), and multiple-methods are particularly recommended for policy-relevant social pharmacy research (Almarsdottir and Traulsen, 2009).

This study was conducted in Jordan's capital city, Amman, and adopted a multiple-method approach comprised of semi-structured interviews and focus groups. The interviews were conducted between October 2013 and May 2014 and their purpose was to explore and identify the challenges facing pharmacy in Jordan. The focus groups were carried out in May of the following year; original participants from the interview stage participated in the focus groups to validate the interview findings and map them against the conceptual framework. I was responsible for recruiting the participants, collected all the data and conducting the validation focus groups. The research team – Claire Anderson (CA), Simon McGrath (SM) and I – were involved in the analytical process.

3.3.2 Semi-structured Interviews

There are three common types of the research interviews: structured, unstructured and semi-structured - with semi-structured interviews considered a hybrid compromise between the other two variants (DiCicco-Bloom and Crabtree, 2006, Whiting, 2008). A semi-structured guide provides a balance between respondent freedom and interviewer control and was ideally suited for the exploratory aims of the interviews (Britten, 1995, DiCicco-Bloom and Crabtree, 2006). Indeed, by including the elements of the prepared interview (i.e. schedule and prompts) the semi-structured interview thus combines "a certain degree of control with a certain amount of

freedom to develop the interview" (Wallace, 1998). The inductive nature of qualitative analysis allows for a process of 'progressive focussing'; a term coined by Parlett and Hamilton(1972) whereby continuous refinement (i.e. of interview topics) through inductive analysis gradually progresses throughout the data collection process. Consequently, whereas questions have been exploratory and expansive during the early stages of the research, once certain issues have been identified, more focused interview schedules were used. Interview guides where constantly reviewed so as to ensure the possibility of eliciting rich data.

At the outset of the project (when the main focus was pharmacy education), two overarching topic guides where featured in most interview questions; namely perceptions (including self-perceptions) of graduate performance and views on university educational provision. Pilot question guides were prepared prior to the fieldwork phase. Upon the commencement of interviews, the questions have been continuously reviewed and refined. An additional topic theme that kept being voluntarily revisited by participants from the start centred on their views of the pharmacy profession in Jordan. As such, additional questions were added to elicit more structured data on an issue that carries considerable implications. It is important at this point to reiterate the added value offered by semi-structured interviews, which have allowed for a great flexibility throughout the progress of the interview process. Appendices 4, 5 and 6 present the early pilot interview guide (targeted at employers), slightly revised guide, and the finalised guide, respectively. The change in the scope of the questions is wide and clear. Initially, different guides were used for the different participant groups (employers and graduates); but the differences were slight and as I gained more confidence in interviewing the participants, the questions were combined into one guide. Through the finalised interview guide, participants were asked open questions about challenges they face in their respective practice area (s), their views on pharmacy education and graduate preparedness for practice, and their opinions regarding the current state of the profession and its leadership.

3.3.3 Study Participants

3.3.3.1 Recruitment and sampling

Upon arrival in Jordan, I reached out to several contacts I had previously met in a semi-professional capacity during a previous visit to the country. (I was collecting survey information for the FIP Global School Survey prior to starting my PhD). These contacts, which represented my starting point, soon became my participants and have since acted as my principal gateways to the country's wider pharmacy community. Access to the majority of participants had been facilitated by my 'gateways'. To start with, the 'gateways', who have been eager to help, as was- to my pleasant surprise- everyone else involved, provided me with a long list of names that I should initially approach. In some cases, I was given contact details for me to seek them out directly. In other cases, my gateway would call their contacts in my presence to further encourage them to assist me in my research, usually informing them that I would be making contact directly in the near future for further information.

A purposive snowballing sampling approach was employed to enhance sample coverage and facilitate access, the latter of particular pertinence in a culture that relies heavily on social connections and influential intermediaries and where informal and formal gatekeepers play a crucial role in recruitment (Biernacki and Waldorf, 1981). It is important here to mention the pivotal role played by the endemic culture of favouritism, and the critical weight of social connections, that continue to pervade the Jordanian community and the Arab world in general. As a result, obtaining access to the key figures in the pharmacy community without the help of social 'gatekeepers' would have been extremely challenging; in fact, experience has confirmed that recruitment efforts would have proven largely fruitless otherwise. With this in mind, I therefore relied on a purposive 'referral sampling' or 'snowballing sampling' in which existing participants acted as recruiting nodes of future participants from among their own acquaintances. In practical terms, this meant I would obtain the direct personal mobile number of a business owner/head or other prominent/key figure in the sector, and would call them to introduce (or re-introduce) myself. I would brief them on my research project, and on what

would be expected of their participation. A positive verbal ascent to my request would subsequently be followed by a mutual agreement over a date and time for an interview.

While snowballing sampling was the overarching approach, other recruitment approaches were also used. In some instances, I have successfully recruited prominent individuals through professional social media websites- namely LinkedIn. In another case, a representative from an industry association assisted me in recruiting participants from the field by sending out an email to its membership that provided an overview of my project and contact details, and kindly requested of members to assist me in my research. (I received a number of responses expressing eagerness to help.) To minimise prejudice in participant selection, each and every future participant referred to me by an existing one was contacted.

3.3.3.2 Participants profile

Fifty-three key informants, relevant policymakers and pharmacy professionals were recruited. All but 7 of the participants are pharmacists by background and 29 (55%) of them female. The participants spanned all sectors of Jordanian pharmacy practice: community pharmacy (both independent and chain), hospital pharmacy, the manufacturing industry, the academic sector (i.e. pharmacy schools), professional and regulatory bodies (e.g. JPA), research and consultancy companies (e.g. clinical contract research, training and development), and governmental and intergovernmental organisations (e.g. Ministry of Health, HEAC). The numbers of participants per each sector as well as a brief description of the constituents and functions of those sectors are listed in Table 3.1. It is interesting to note here that it is not unusual for a participant to hold several positions (e.g. part-time academic, independent pharmacy owner and drugstore/ warehouse owner).

In Table 3.2, the positions held by the participants are laid out. Recruited participants included individuals with senior and middle management positions (e.g. business owners; sector representatives; deans) as well as employees (e.g. recent graduates; practitioners; public servants). Whilst most hold the highest levels of organisational management, recently qualified pharmacists were also interviewed to gain insight into the views of the younger members of the

workforce and allow for any contrasting experiences and differences to arise. It is important to note that during the time elapsed since the data collection phase, professional positions and standings of the participants may have changed; the participants will be referred to in the capacities during which they were interviewed.

Sector	Description	Frequency (%)
Community	Independent/ chain pharmacies	7 (13%)
Hospital	Hospital/ clinical pharmacies	3 (6%)
Technical industry (manufactories)	Research and development; production; quality Control	3 (6%)
Technical support and commercial industry (drugstores)	Product registration; regulatory affairs; medical information; wholesaling and distribution; marketing and sales	12 (23%)
Academia	Pharmacy education institutions	8 (15%)
Professional and regulatory	Professional bodies; representative organisations	5 (9%)
Research and consultancy	Contract research organisations; bioanalytical studies; clinical trials; consultancy services; training and development	6 (11%)
Governmental and intergovernmental	Ministry of Health; Jordan Food and Drug Administration; Higher Education Accreditation Commission; United Nations	9 (17%)

Table 3.1 Distribution of participants by sector.

Corporate/organizational position	Frequency (%)*
Senior management (e.g. owner, director, president etc.)	16 (30%)
Middle management (e.g. general manager, vice president, head of department etc.)	6 (11%)
Professional bodies representatives	5 (9%)
Governmental officials	9 (17%)
Pharmacy school deans	7 (13%)
Entry-level (i.e. newly qualified pharmacists)	9 (17%)
Other (i.e. postgraduate student)	1 (2%)

Table 3.2 Distribution of participants by position.
***Percentages may not total 100 due to rounding.**

3.3.4 Data Collection

3.3.4.1 The interview

Potential participants were initially contacted by phone and invited to take part in the study. Arrangements were made with those who agreed and the interviews were usually conducted at the participants' place of work. After arriving to the appointment and meeting my participant, I would break the ice by introducing myself once again and engage in an informal chat. Afterwards, I would give the participant the study information sheet (Appendix 7) for them to read thoroughly as I explain the main issues involved in their participation. After being asked if they had any questions or needed any clarification, the participants would be requested to sign two copies of the consent form (Appendix 8), one to be retained by the participant and the other by the researcher. Both the Participant Information Sheet and the Consent Form have been translated to Arabic. All participants provided consent. I would fill out the Interview Cover Sheet (Appendix 9) and ask for the participant's business card (if available). I would then activate my two digital voice recorders (a principal recorder and a back-up device) and commence the interview using the interview questions as a guide. All interviews were audio recorded – with one exception, where the participant declined to be recorded but was happy for the researcher to take notes.

In addition to the Interview Cover Sheet, the Interview Pack also contained special papers (watermarked Confidential) for any handwritten notes (Appendix 10). The interviews lasted as long as two (2) hours while others were as short as 15 minutes (depending on the participant's schedule). The average duration for interviews was 49 minutes. To bring the meeting to a close, I would thank the participant and promise to send him/her the final results of the thesis. Once the interview has been conducted, the Post-interaction Self-reflection Form (Appendix 11) is filled as soon as possible. This would usually take place in my car before heading off to the next destination. Contact details of any referrals recommended by the interviewee were saved onto a contact list of future participants (Appendix 12). Using the Participant Top Sheet (Appendix 13), the interview materials are then processed and records are transferred

electronically onto Microsoft Excel sheets to ensure a comprehensive record trail. The audio recording is also uploaded and archived.

3.3.4.2 Post-interaction self-reflection

In qualitative research, when writing up information regarding a particular data collection method, it is customary for the researcher to reflect upon their experience of using the method. This convention illustrates a key characteristic of qualitative research: reflexivity. A diary or journal to record the researcher's impressions, reactions, and other significant events that may occur during the data collection phase of the research is thus highly recommended as a useful source of supplementary information that further strengthens the validity and reliability of the study. To this end, and to facilitate documenting my personal reflections, a 'Post-Interaction Self-reflection' form was devised. The form was completed as soon as possible after each interview. It allowed me to critically reflect on my interaction with every participant noting my thoughts, feelings and decisions as researcher and interviewer and acknowledging my centrality to the research (Wall et al., 2004, Horsburgh, 2003, Barbour, 2001). In providing an auditable record of the research process, such reflective practices are used to maintain transparency and methodological rigour, and maximize researcher reflexivity (Jasper, 2005, Ortlipp, 2008). Reflective writing also helped in detecting re-emergent themes and recognising theoretical saturation (Long and Johnson, 2000). The form would allow me to express any issues regarding the interview, including: logistics, environment, participant interactions, question flow, and overall feeling about the interview. It even goes as far as documenting what I was wearing that day. This also helps me re-live the experience prior to analysis, which usually takes place months after the interview date. Two examples of complete forms are appended, one after a seemingly positive interaction with a participant (Appendix 14) and another labelled as negative at the time (Appendix 15).

3.3.4.3 Data saturation

In quantitative research, an approximation of the number of participants is best reached by conducting a power analysis to generalise findings from the sample to the population. Qualitative research, however, is a different case, as the researcher is more apt to elect

purposive or theoretical sampling to increase the scope or range of data exposed, as well as to uncover the full array of multiple perspectives potentially on offer. Saturation - which is essentially halting the data collection process when 'no new themes are forthcoming'- was the key determinant of sample size (Cutcliffe and McKenna, 2002).

In terms of sampling, Josselson and Lieblich (2003) caution, however, that real saturation never occurs because each new respondent has something unique to contribute to the study. In fact, they noted, it is usually the researcher who becomes saturated and, as such, it is important to collect sufficient data to represent the breadth and depth of the phenomenon without becoming overwhelmed by the process. Accordingly, the data collection should proceed until no new relevant data are uncovered regarding a particular category, and until all categories have been well developed and validated (Morse, 1995). An initial estimate predicted the number of participants to be in folds of tens. This has turned out to be the case. The point of saturation, or when no new information was obtained from data collection, was reached after the 50th interview; no new ideas emerged from the following three interviews.

3.3.5 Data Translation

Effective translation in cross-language research is critical to the interpretation of the data and integrity of the results and steps to ensure the conceptual equivalence of the translations were taken (Squires, 2009, Al-Amer et al., 2015). To address the complexities of cross-language research and to maximize methods rigour, exhaustive approaches to ensure conceptual equivalence were adapted. Squires's (2009) criteria were taken into consideration (Appendix 1).. It is important to note that a technically accurate translation does not necessarily mean that subtle nuances of the original language have been preserved and adequately conveyed (Bradby, 2002). Indeed, fixed word-to-word translations should not be used when the analyses may benefit more from an alternative and equivalent English phrase formulation. For instance, the Arabic language is rich in culture-specific terms that have no equivalent terms in any other language (Kashgary, 2011).

Because I was the only one in the research team to share the same language and culture as the participants, translating the interviews from the source language (Arabic) to the target

language (English) was necessary for the involvement of the rest of the team in analysing the data and disseminating the findings. To expand the currently thin literature on managing Arabic-English cross-language research and provide insight for those undertaking research in non-English contexts, a summary of the methods employed by this study will be outlined.

Participants were free to choose to conduct the interview in either Arabic or English, as most- if not all- of the participants are bilingual. Most participants chose to conduct the interview in Arabic but engaged in code-switching, which is characterised by switching between Arabic and English. Help with transcribing the audio recordings was sought, and secured, through recruiting an undergraduate student currently undertaking a B.Sc. in Pharmaceutical Engineering in a Jordanian university that does not have a School of Pharmacy. The student is bilingual, and because of his studies, is not unfamiliar with many of the terms and phrases featured in the recordings. In light of these factors, he was ideally placed to transcribe my recordings. The assigned transcriber transcribed the interviews verbatim, keeping intact both English and Arabic speech, as well as features of the Jordanian dialect. As such, the transcriptions were largely not in formal or classical Arabic. I compared every transcription with the raw data to check them for accuracy before forward translating them (from $Arabic_1$ to $English_1$).When a participant code-switched to English, this was when they were trying to emphasise a point, or could not phrase it any better in Arabic. The translation process was subsequently influenced by the code-switching in that English components have been kept grammatically intact while the translation of the Arabic component was 'shaped around' the English words. This is important to mention as the translation could have taken a different form, and yielded a different result, had no English words been present in the original recordings. In general, when a participant code-switched to English, this was when they were trying to emphasise a point, or could not phrase it any better in Arabic. I have therefore made the calculated decision to keep these English elements intact.

It has been a challenge finding a competent and affordable certified translator who would be able to check and certify my own translations. So a number of practical measures were taken to ensure there was no loss of equivalence. During translation, a translation glossary or lexicon of

the most common and key words was devised to ensure consistency throughout the process (Squires, 2009); it was certified by a local professional translator (Appendix 16). To further validate conceptual equivalence, a representative sample of the translated interviews was then selected for back-translation. Back-translation is one of the most common and highly recommended methods of evaluating conceptual equivalence between source and target versions (Brislin, 1970, Chen and Boore, 2010). Therefore ten full transcripts of the translated interviews were randomly selected and back-translated (from $English_1$ to $Arabic_2$) by an independent bilingual pharmacist and researcher; at least one interview was selected from every sector group. The back-translator and I compared the back-translations ($Arabic_2$) with the original transcripts ($Arabic_1$) to assess whether there was any loss of equivalence or misinterpretation during the initial translation. After conducting the review, both the researcher and back-translator found no discrepancies and agreed that the back-translations accurately reflected the original meanings of the text. The research team decided that there was no need for further translation verification measures.

The main researcher, transcriber and back-translator are all English-Arabic bilinguals, native speakers of the Jordanian dialect and with professional backgrounds in pharmacy. Issues of miscommunication or ambiguities in using the dialect are thus minimal. The participants' identities were kept confidential to the transcriber and back-translator. But for rigour, they both signed confidentiality agreements stating that the data content may not be discussed with anyone except the researchers. Copies of the signed agreements are appended (Appendices 17 and 18).

3.3.6 Data Analysis

The translated interview transcripts were analysed thematically using the qualitative data analysis software NVivo 10. The thematic analysis followed the six steps laid out by Braun and Clarke: (1) familiarizing oneself with the data, then (2) generating the initial codes, followed by (3) searching for themes, (4) reviewing them, (5) naming and defining them, before finally (6) writing-up the report (Braun and Clarke, 2006). In accordance with the first step, I familiarized myself with the interview data through translating them, checking the transcripts against the audio-recordings, reading and rereading the transcripts, referring back to the self-reflection notes, and noting down initial ideas. I carried out the initial coding of the entire data set. A code is "a label that the researcher attaches to piece of data" (Fade and Swift, 2011). When analysing text, a piece of data could be a single word, a phrase, a complete sentence or a paragraph. The initial codes were produced in an inductive manner, meaning they were driven by the data and not by any pre-existing coding frames or theories. Because the coding was data-driven, it could be considered inductive –as opposed to deductive coding which is driven by pre-determined concepts or theories (Fade and Swift, 2011).

To reduce the risks of subjectivity, multiple-coding was employed (Barbour, 2001); CA and SM separately analysed segments of text and checked them against the initially assigned codes to identify any disagreements and to further refine the coding framework. The codes were collated into categories before being grouped to themes; categories result from sorting similar data into one place while a theme summarizes an "essence" of related codes and/or categories (Morse, 2008). The research team met on several occasions to discuss and review the themes; thematic maps were generated and used throughout these discussions to illustrate the themes and their relationships and check whether they work consistently with coded extracts and the overall data set. A map used at the later stages of the analysis is appended as an example (Appendix 19). During the last comparison of analyses, the researchers all agreed upon a final set of eight themes, with each theme representing a separate challenge area. At this point, the research team decided to report the results back to the participants.

3.3.7 Data Validation and Mapping

'Participant or respondent validation/follow-up', 'backtalk' or 'member checking': all describe the process of "cross checking research findings with participants" (Barbour, 2001). Participant validation helps maintain the analytic rigour of the research process, refine explanations, display participant respect, and ensure the continuity of stakeholder-engagement (especially significant in policy-relevant research sensitive to de-contextualisation) (Long and Johnson, 2000, Frisina, 2006, Mays and Pope, 2000, Krefting, 1991). Participant validation was carried out in this study to primarily assess whether the researchers' interpretation of the data are true to the participants' perceptions, thereby increasing the interpretive validity of the study (Lincoln and Guba, 1985).

As this method was not part of the original ethically cleared project proposal, a query was made to the Research Ethics Committee regarding conducting the focus groups. The Committee confirmed that no amendments to the original application were needed (Appendix 20). Individually reporting results to participants presented several time and resource constraints so the use of focus groups was deemed the most logistically effective and methodologically complementary form of generating collective participant feedback. Email invitations were sent to all 53 participants inviting them to participate in the focus groups (Appendix 21). The emails were sent on April 26th 2015, about a year after all interviews were collected. A total of 13 (25%) participants took part in two focus groups (n_1=6, n_2=7). Table 3.3 below lists the focus group participants' sector distribution compared to all the 53 interview participants.

Sector	Interview Participants Frequency (%)	Focus Group Participants Frequency (%)
Community	7 (13%)	2 (15%)
Hospital	3 (6%)	1 (8%)
Technical industry (manufactories)	3 (6%)	1 (8%)
Technical support and commercial industry (drugstores)	12 (23%)	3 (23%)
Academia	8 (15%)	2 (15%)
Professional and regulatory	5 (9%)	3 (23%)
Research and consultancy	6 (11%)	1 (8%)
Governmental and intergovernmental	9 (17%)	0 (0%)
Total	**53 (100%)**	**13 (100%)**

Table 3.3 Distribution of focus group participants by sector.

Both sessions ran in the same order on the same day (May 2nd 2015) using the guide in Appendix 22. A business meeting room, donated by one of my acquaintances, was used that day. Participants signed consent forms (Appendix 23) and the sessions were audio recorded. The sessions were facilitated using a PowerPoint slide presentation (Appendix 24). Every challenge was then discussed among the group to validate its accuracy in terms of whether they think it fairly and reasonably represents the situation as they perceive it (Torrance, 2012). Both groups validated the identified challenges and agreed that no changes, omissions or additions were needed. Participants were then asked to take part in an exercise in which each of them was handed a printout sheet with an enlarged image of the conceptual framework (Appendix 25). A numbered list of the challenges was displayed on a large screen. The

participants were then asked to assign each challenge to the axis they believed reflected the primary disconnect leading to it. To ensure their understanding of the task, several fictional examples were presented before commencing the exercise. This form of mapping offered a creative and participant-centric means to ground the participants' perceptions within the framework (Wheeldon and Faubert, 2009). After completing the activity, I facilitated a group discussion in which the participants' answers on each challenge were discussed and debated. Additional attention and time was especially given to answers contradictory to the majority. Discussions continued until unanimous agreement was reached on the most suitable answer, and complementary solutions and recommendations were proposed and collated. A secondary aim of this participant validation process was to allow the participants to raise any relevant professional issues or updates that may have developed in the time elapsed since their interviews. Some participants shared new information about the scene in Jordan (e.g. upcoming law changes), but no new major themes emerged and the list of challenges was retained.

3.4 Results

3.4.1 Interview Findings

Thematic analysis of interview data resulted in eight major themes describing the following challenge areas: graduates preparedness for practice, the quality assurance and accreditation of pharmacy education, pharmacy pre-registration requirements, workforce development, workforce planning, pharmacist remuneration and wage rate, pharmacy assistants, and PharmD pharmacists.

3.4.1.1 Challenge area #1: graduates preparedness for practice

The participants, and particularly employers from across all sectors, reported that recent pharmacy graduates – or newly registered pharmacists – are generally unprepared for practice, citing a gap in implementation between theory and practice as the main factor. According to a training and development manager of a pharmacy chain:

> *"There is a very huge gap between here [practice] and there [education], and there is a gap between pure scientific information and translating it into benefits and features for the customer."* (020)

One manager at a wholesale and distribution company similarly describes this issue:

> *"There is no link between science and business. That's very clear and we can see this when we conduct our interviews [with graduates]."* (033)

A newly registered pharmacist who works in wholesale and distribution also captured this:

> *"They [pharmacy schools] need to incorporate practice more which is a very important aspect for pharmacy."* (038)

There is a general consensus that this issue is mainly linked to the quality of the taught curricula which was described as being traditionally science-focused and largely theory-based. Employers also reported a number of skills that they perceive as generally lacking from the graduates they come across. All sectors complained of gaps in interpersonal skills (e.g.

communication skills) as well as analytical and critical thinking skills. In community, patient counselling was also lacking. The industry and regulatory affairs sectors mainly report shortages in practical knowledge in laboratory analytical skills and technical knowledge on basic regulatory and drug registration concepts, respectively. A wholesale and distribution sector representative illustrated this:

> *"The skills or knowledge that the student acquires in this field [regulatory] is very superficial. It doesn't give room for the student, after five years of university- and five years is a long time- to even know what his or her future career specialty or main orientation is."* (003)

This additional aspect of the lack of career direction or awareness of the different pharmacy sectors was also reported by a number of the participants who claim that this explains why many new pharmacists often switch between a range practice settings and jobs upon entering the market.

3.4.1.2 Challenge area #2: pharmacy education accreditation and quality assurance

Academics highlight a different challenge in the field of pharmacy education. Pharmacy schools deans describe the current curricular accreditation standards imposed by HEIAC to be restrictive with a science-centric scope, resulting in rigid, science-based curricula. This effect was described by a private school dean as:

> *"There are decent systems in higher education that the Accreditation Commission put to conserve the reputation of higher education and preserve these specialities. Unfortunately, on the other hand, there are some restrictions that hinder the freedom of the way deans and stakeholders should think about developing the programmes.*" (047)

There is also a reported variation in the way private and public schools undergo accreditation and quality assurance (QA); with private schools apparently subject to stricter processes while regulations are somehow more 'relaxed' for their public counterparts. Another private school dean reported this as:

> *"If I want [the curriculum] to be unique in anyway, I can't because the accreditation won't allow me. So the accreditation standards are enforced on me and the other schools, but the public schools are exempt for an unknown reason."* (052)

A HEIAC spokesperson countered this:

> "*We enforce our standards on everyone but the public universities have excuses, one of which is the admission system they have. The [student intake] numbers come to them through the Ministry of Higher Education, so the numbers are enforced upon them. For example, if the university requests 2000 students, they are sent 4000. So how can I apply the same restrictions?'*(048)

Another topic discussed by participants, both academics and non-academics, was The Pharmacy Assistant Bridging Programme (PABP). The PABP allows a Pharmacy Assistant Diploma (PAD) holder to enrol into a Bachelor of Pharmacy programme. Participants reported that the admission processes of the PABP and PAD are commonly known to be unregulated, allowing individuals who did not meet the stipulated entry requirements to enter the programmes and eventually the profession. Some participants view the entire PABP as a threat to the profession; one drugstore owner expressed this strong opposition to it as:

> *"They need to stop the Bridging! Why can't the nurse study further and become a doctor, or the surveyor an engineer?!Why are they allowed to become pharmacists?!"*(012)

3.4.1.3 Challenge area #3: pre-registration requirements

Participants expressed alarmed concern about the organization and regulation of pre-registration training. One chief operating officer of a pharmacy chain described this as:

> *"Training is the number one major issue on which there is hardly any focus and there is barely any regulation. It's extremely unorganized and there is no follow-up and it's harming them [the trainees]."*(031)

Others described how it is widespread practice – and common knowledge – for pre-registration trainees not to complete their mandatory 1440 hours of training. Trainees are required to provide evidence to the JPA that they've completed their training to be able to register, and this is usually done by providing a signed statement (or more if conducted in more than one site) from the supervising pharmacist confirming the number of hours the trainee completed. It was reported that the forging of training statements is common practice. One recent graduate who works as a community pharmacist illustrates this:

> *"Some people tell you: 'Don't worry, I can arrange it [the statement] for you.' So you say to yourself, why should I do the training? They need to be more strict when it comes to pre-registration training; because no one trains. None of us trained. Because if we had actually trained, we would have entered the workplace with some understanding; it would have made a difference."* (024)

This is not a new phenomenon; a vice president of a drugstore reflected:

> *"Training should be more controlled. I remember even back when I graduated the training wasn't so controlled and anyone can sign a training slip without actual training, to be honest. We just had to get a pharmacist's signature."*(008)

There are currently no official training frameworks or validation mechanisms in place; but a JPA spokesperson explained that the introduction of the pre-licensing examination in 2011 was in

part a responsive measure to this training issue and is its aim is to filter out unqualified pharmacists:

> *"Whether they trained or not, whether the statement is real or fake, if they pass the exam, then at least they know something. They must have walked into a pharmacy during their lives."* (030)

The examination is not viewed as a rigorous entry requirement though. According to a managing director of a drugstore,

> *"It's a very simple one. It should be a proper exam, one that would require them to revise everything they've studied. Because you want to guarantee that those who enter the market are of quality and qualified… Other than that, the reputation of the profession will be ruined and so will be the market."*(016)

3.4.1.4 Challenge area #4: workforce development

The fourth theme emerged from an issue that was commonly recurring in the interviews: the complete absence of mandatory CPD and/or CE requirements of pharmacists, as well as of any post-licensure revalidation systems. A senior pharmacist and researcher from the Ministry of Health (MoH) described this as:

> *"There is no national mandatory continuing pharmacy education system. We have no re-licensing processes. My license could be 50 years old without a change. The medics on the other hand have a Higher Medical Council that regulates continuing education. We are fighting and battling to have a similar pharmacy council that would stipulate systems for continuing education."* (015)

There is significant frustration with the situation, with considerable blame directed at the JPA for not taking measures to ensure its members' fitness to practice. A director working in the manufacturing industry captures this frustration:

> *"The JPA should have a stronger role. We have been talking about continuing education for about a million years now!"* (027)

Another MoH pharmacist voiced her discontent:

> *"This [lack of CPD] is the first big flaw! And whose responsibility is this? The JPA's!"* (009)

Pharmacists have been actively calling for the establishment of a JPA-commissioned pharmacy board or council that would address and oversee the issue. According to the JPA, systemic bureaucracy and difficulties in implementing legislative measures have been to blame for the lack of tangible progress by its existing CPD/CE Working Committee; a spokesperson explained:

> *"Unfortunately it's taking a lot of time because it needs... It's a law by itself so it needs legislation. That's the part we're working on; unfortunately it's going to take a long time."*(030)

Private sector employers have taken initiatives involving the creation and deployment of in-house assessment systems; a community pharmacy training manager illustrated an example:

> "*Our problem in the country is that we don't have any certification body to certify your license; once you're licensed, you're licensed… So you feel that there is no difference between those who had just graduated and what they're like ten years after graduation, which is a disaster. The pharmacist is not developing. So to keep up with that, we did something, an internal policy, to enforce on everyone. We haven't got a certification board or a re-licensing system so we made it part of our promotion criteria.*" (020)

3.4.1.5 Challenge area #5: workforce planning

In light of the concurrent surge in the number of pharmacy schools and the absence of workforce planning strategies, the ensuing growth in the workforce posed another concern for some pharmacists. A pharmacist who owns an independent pharmacy said:

> *"Well this is what they call random planning! This is not acceptable really. At whose expense will this be? Will it be at the expense of the society? Or will it be at the expense of the pharmacy society later on? Or is it at the expense of quality the [of graduates]? What will happen when in the future the supply exceeds the demand?"* (002)

Some insist that controlling student intake be considered. A senior MoH pharmacist and researcher described this:

> *"There are no accurate studies as to how many pharmacists Jordan needs. In the past, it used to be just the Bachelor degree and now we have the PharmD degree as well… Like I said there should be planning for the profession: a plan for how many students to teach and how many graduates we need."* (015)

According to one public pharmacy school dean, no new pharmacy schools should open; in describing this, he also highlights an underlying issue regarding the JPA's role in influencing pharmacy higher education policy:

> *"It is best that we do stop [opening new schools]. From my knowledge and managerial experience, I don't think it will work without pressure from the JPA. Unfortunately, the JPA is not practicing any regulatory role on education nor does it contribute to it; it has absolutely no relationship with education."* (049)

In contrast, other participants think that focus should be turned to actively creating cross-sector job opportunities for pharmacists rather than controlling the supply-side. This is also the JPA's view according to one spokesperson:

> *"I'm not saying we should cap the number of students or reduce them, I'm not with that. Let them study pharmacy if they want to but I think we need to work more on creating job opportunities for them."* (017)

Contrasting but unsubstantiated views among participants also emerged on the workforce's employment rate. On the one hand, some argued that the continued uncontrolled supply of pharmacists will exacerbate an already looming unemployment crisis. Opposing viewers deny an underlying problem in unemployment.

3.4.1.6 Challenge area #6: remuneration and wage rate

Participants report that pharmacists are routinely paid below the officially-stipulated rate by the JPA (≈$423-494 US Dollars/month for community pharmacists). A senior pharmacist in a private hospital described this:

> *"I mean until now, there are pharmacists who take 150JDs [≈$211] especially in rural areas. If there was a strong syndicate, it would be able to enforce its laws through the Parliament and Ministry [of Labour], and then no one would dare overstep the pharmacist… The JPA shouldn't allow transgressions on the salary issue. Pharmacists should be able to report on employers who pay less and the JPA should be ready to punish and enforce but you know how it is, it's all connections and people knowing each other."*(036)

A training manager at a community pharmacy chain also discussed the issue of underpayment:

> *"We hear a lot about people especially those working in the provinces whose salaries are 80, 90, or 120 JDs. So there is no good support from the JPA. I don't feel at all that there is any support… There is a conflict of interest by those in charge of the JPA. I mean if I own a drugstore or a pharmacy I will influence many things."*(020)

The participant was referring the JPA's organisational structure, in which the majority of the governing Council's seats are reserved for pharmacy and drugstore owners; participants argue that, by making up part of the Council, business owners are thus positioned to influence policies in such a way that may not represent the best interests of the employed workforce. The business department head of a drugstore explains:

> *"There are problems in the profession which stem from the JPA in my opinion. The profession here is politicized. I mean drugstore owners have a slice. Pharmacy owners have it too. Private pharmacies also have their own sector. So the profession starts from the top of the pyramid with those who are supposed to represent the profession and who, I believe, look out for their own personal interests - which is their main driver."*(033)

Both employees and employers have complained that the current minimum rate has been set arbitrarily and is too low in the context of rising prices and living costs. The chief executive officer of a pharmacy chain said:

> *"The minimum salary is generally low… This is frustrating to many extents."*(031)

3.4.1.7 Challenge area #7: pharmacy assistants

The seventh challenge area describes the issues reported about pharmacy assistants. The first is their deregulation. Besides the Diploma, pharmacy assistants aren't required to complete any more requirements before practice, training or otherwise. Additionally, there is no registration body for pharmacy assistants and thus no practice license to be given. According to a participant from the MoH's Health Professions and Licensing Directorate, pharmacy assistants were deregulated in 2000; the participant described the negative consequences of deregulating pharmacy assistants and indicated that it was fuelled by "professional politics":

> *"There used to be control before, whereby you couldn't practice without approval from the Minister. Now all you need is to pass the examination. Whether you trained or not, no one can control you. The label 'pharmacy assistant' was dropped from the Public Health Act and the JPA's Drug and Pharmacy Law. This is professional politics. They felt that the pharmacy assistant is an intruder into their profession."*(014)

Indeed, many pharmacists view pharmacy assistants in a negative light and consider them "intruders" onto the pharmacy profession; one independent pharmacy owner captures this shared sentiment:

> *"We have a lot of intruders in the profession and these are the pharmacy assistants."* (002)

They described how professional boundaries are overstepped through the illegal dispensing of medicines by pharmacy assistants; while only registered pharmacists are allowed to dispense medicines, participants described how common it is to find pharmacy assistants not only dispensing to patients, but in some instances running pharmacies alone. An independent pharmacy owner describes this:

"Legally they [pharmacy assistants] shouldn't [dispense] but if you go around pharmacies after 5 pm, especially in the downtown, you wouldn't find pharmacists. You would find pharmacy assistants." (004)

The MoH's licensing directorate employee raised another important notion:

"Now let's talk about who has real impact. Let's assume doctors stopped working. The whole of Jordan would stop. The same goes for nurses. But if pharmacists were to stop working? Pharmacy assistants will simply replace them." (012)

3.4.1.8 Challenge area #8: PharmD pharmacists

The B.Sc. and the PharmD are viewed by the participants as two entry-level degrees in a practice environment that is essentially the same for both. The unclear role of PharmD graduates within the Jordanian national health system force many to share the same jobs of those with a B.Sc. One PharmD graduate described her own situation:

> *"I am a PharmD graduate and there is no work in hospitals. PharmD, at the moment, is not active as a field. I don't like to work in a pharmacy; I trained there and I didn't like it. I wanted to work in a hospital but didn't find one to work in. I tried being a medical representative but I didn't like roaming around in the streets so I felt that this [regulatory affairs] is nice, but it has nothing to do with what we studied, absolutely nothing."* (044)

According to the participants, there are far less clinical and hospital positions than there are PharmD graduates. A representative of a national pharmacy student association posed the following:

> *"How can you, as an educational provider, start a programme when you didn't communicate with business owners to discuss job creation?"* (026)

Additionally, interprofessional tension between physicians and pharmacists continues to form a barrier for the level of integration required for proper pharmaceutical care provision. A pharmacist manager at a sales and marketing company raised this issue:

> "*Whoever suggested the PharmD programme… should have done full awareness campaigns to the hospitals so that each hospital knows the importance of the PharmD pharmacist and so the doctors themselves know that this is a partner: someone who will stand by your side and work with you. Until now, their view of them is quite bad.*" (034)

There are ongoing efforts by the JPA to help secure permanent positions for some Pharm. D. graduates mainly through arranging temporary hospital posts in the hope of them becoming permanent and in some cases sharing the their wages with employers; a JPA spokesperson indicated that this has had positive effects so far:

> "*Slowly once they [physicians] get used to them [pharmacists], they will realise that these pharmacists are good and that they help; then they won't be able to dispense them. We've seen this happening in one of the hospitals. They started with 1 [pharmacist] and now they have 10."* (030)

3.4.2 Focus Group Findings

The eight main challenges affecting the state of the pharmacy profession in Jordan were validated with the study's participants during the focus groups. The conceptual framework was used to identify the primary sectorial disconnect that was perceived by the participants to explain each challenge. Recommendations for solutions to each challenge were also proposed by the participants. Figure 3.2 below illustrates the results final results of the mapping exercise. Table 3.4 summarizes the validated challenges, agreed outcomes of the mapping exercise and lists the participants' main recommendations for development.

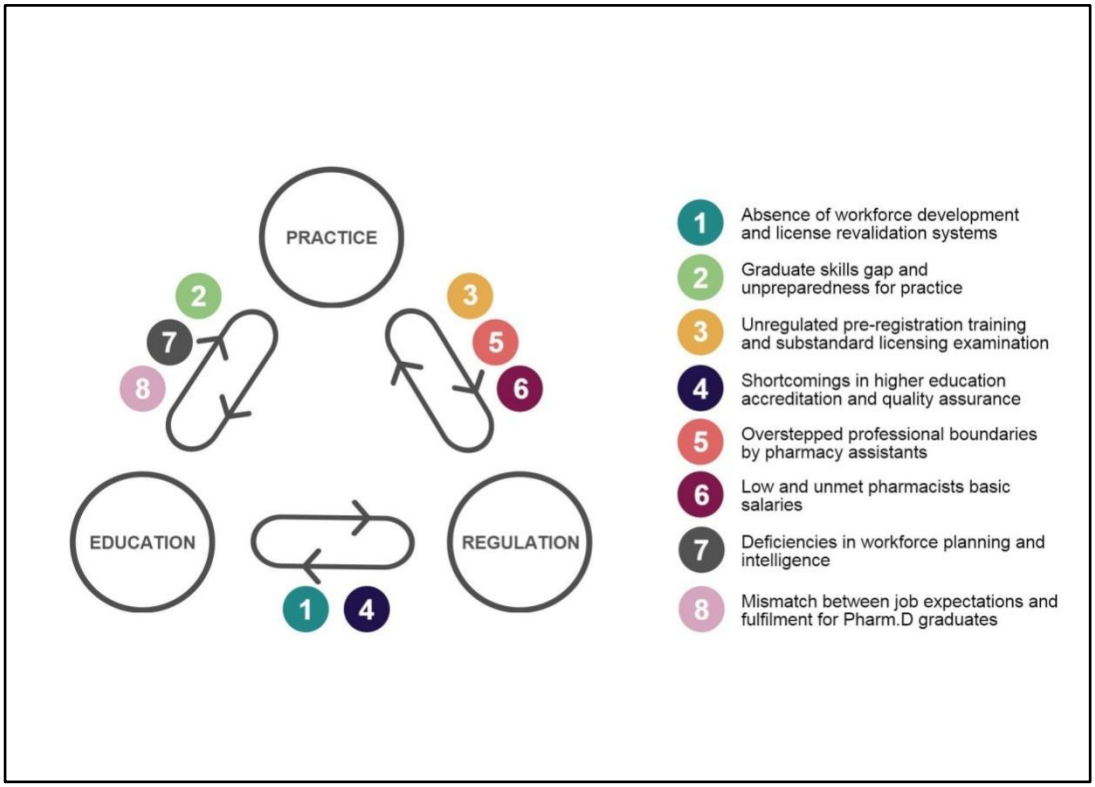


Figure 3.2 Visual representation of mapping outcomes.

Summary of validated challenges	Framework mapping outcome	Recommendations for development
1) Graduate skills gap and unpreparedness for practice	Education-practice	➢ Education providers to review and adjust the balance between theoretical and practical aspects of the curricula they teach. ➢ Accreditors to re-evaluate current curricular standards and develop an outcome-based standards framework based on needs-based competencies.
2) Shortcomings in higher education accreditation and quality assurance	Regulation-education	➢ Accreditors to review the current admissions processes and entry requirements of the PAD and PABP. ➢ Accreditors to review the usability and flexibility of current curricular standards for the purposes of pharmacy programme development.
3) Unregulated pre-registration training and substandard licensing examination	Regulation-practice	➢ JPA to urgently establish a training framework and introduce a structured penalties regime for noncompliant trainees and complicit pharmacists. ➢ JPA to review the standards of the current pre-registration examination.
4) Absence of workforce development and license revalidation systems	Regulation-education	➢ JPA to urgently establish a CPD standards framework ad push for the legislation of CPD requirements and, in due course, for continuing fitness to practice.
5) Deficiencies in workforce planning and intelligence	Education-practice	➢ Education providers to collaborate with all stakeholders on creating cross-sector job opportunities for pharmacists. ➢ JPA to establish workforce planning strategies and assess current and future supply and demand.
6) Low and unmet pharmacists basic salaries	Regulation-practice	➢ JPA to introduce a structured penalties regime for non-compliant employers and consider implementing whistle blowing mechanisms. ➢ JPA to review and assess the need to increase the current minimum wage rates.
7) Loss of occupational control to pharmacy assistants	Regulation-practice	➢ JPA to urgently review enforcement of dispensing, pharmacy ownership and management laws are urgently called for. ➢ JPA to consider creating clear national definitions of the roles of all pharmaceutical personnel. ➢ JPA or/and MoH to urgently consider a reregulation drive for pharmacy assistants.
8) Mismatch between job expectations and fulfilment for PharmD graduates	Education-practice	➢ Education providers to lead efforts in integrating graduates into the market and address any misapprehensions held by prospective PharmD students over their future.

Table 3.4 Summary of the eight validated challenges, framework mapping outcomes and recommendations for development.

3.5 Discussion

3.5.1 Key Findings

This study set out to identify and understand the current challenges facing the pharmacy profession in Jordan. The validation of thematically analysed interview data and their mapping using conceptual framework that has been used in pharmacy(International Pharmaceutical Federation, 2014b) resulted in eight main challenges spanning education, regulation and practice.

(1) The unpreparedness of graduates for practice highlights a disconnect between educational outcomes and practice needs. (2) The inconsistencies of higher education accreditation and quality assurance mechanisms point toward a gap between educational regulations and their operationalisation in the respective educational institutions.(3) The extent to which pre-registration training is unregulated and unorganized is a result of a regulation- practice gap. (4) The absence of educational workforce development systems (i.e. CE and CPD) corresponds to a lack of regulatory policies on workforce education, hence a regulation-education gap. (5) The growing supply of the workforce coupled with unclear market demand are a symptom of a general lack of engagement between the educational and practice sectors. (6) The reported occurrence of community pharmacists being paid below their nationally stipulated minimum wages is traced to the ineffective enforcement of minimum wage regulations in practice. (7) The illegal dispensing by pharmacy assistants in community is another example of a regulation-practice gap. Finally, (8) the mismatch between the intended role of PharmD graduates and actual job fulfilment highlight another disconnect between the education and practice sectors.

3.5.2 Mapping and Interpreting

Most of the challenges are complex and the causal factors are multifaceted and could be traced to more than one, or all, of the three disconnections of the framework. This was illustrated by the different answers raised by the participants during the focus groups. For example, CPD/CE was also explained as a lack of workforce education in practice settings (education-practice gap), but it was eventually agreed that the absence of legal CPD/CE requirements of pharmacists merited prioritization (regulation-education gap). Collaborative efforts among the groups to simplify the explanations by reducing them to one disconnection axis per challenge were not meant to oversimplify the issues but rather facilitate prioritizing them; identifying a priority area for development within each of the themes allowed for a more streamlined process of formulating the most relevant recommendations. One example can be found in pre-registration requirements which include both the training and the examination, but the state of the unregulated training was prioritized over the examination's standard and thus drove the mapping process and listing of the resultant recommendations. Recommendations and suggested solutions addressing – what were viewed to be secondary – sub-challenges were not excluded and are reported in the findings of this study (see Table 3.4 above). In the case of the pre-registration requirements challenge, participants suggested that the JPA consider reviewing the current examination's standards. The framework not only allowed us and the participants to conceptualize the challenges, but also to view them from multiple perspectives; in doing so, we were allowed to consider factors beyond those reported in the literature.

3.5.3 Implications of the Framework

3.5.3.1 The importance of engagement

The framework also highlights the importance of multi-sector engagement and collaboration in professional arenas. According to the framework, the separations between its components allow for checks and balances between any two sectors and it is important that the separations don't get too wide. The PharmD challenge in Jordan illustrates the effects of a separation that is too wide between education and practice. While it was reported that the programme's addition to pharmacy education in Jordan was intended to expand the pharmaceutical care role of pharmacists in practice (Al-Wazaify and Albsoul-Younes, 2005), the practice environment – particularly in hospital settings – is not prepared for the uptake of hundreds of PharmD graduates according to the participants. A 2012 study stated that less than 5-10 institutions offered comprehensive pharmaceutical care services in Jordan (AbuRuz et al., 2012b). This was not taken into consideration when the PharmD – a degree originally designed for the North American practice settings – was first adopted by a public school. The controversy of the PharmD in Jordan is not surprising; the establishment of the PharmD model by a number of developing countries in Asia, Africa and the Middle East is not a new trend and Anderson et al. have described the downfalls of adopting a program that is not aligned with the local healthcare systems and population needs (i.e. needs-based) (Anderson and Futter, 2009). Similarly, the unpreparedness of graduates for practice and their skill shortages also indicate an education-practice disconnect that points towards a general lack of a unified professional vision for education driven by and for all stakeholders.

3.5.3.2 The perils of self-regulation

Another important aspect of the framework is its illustration of the limitations of professional self-regulation. Where dual or multiple responsibilities are held in one sector, there is not the same motivation or incentive to look for changes and improvements. Instead, there is always the potential that 'internal arguments' – for and against any development or change– will tend to perpetuate the 'status quo' instead of bringing about needed changes. This may explain the stagnation depicted in some of the challenges, especially those that fall under the

responsibilities of the JPA. Participants reported that some of the challenges are not new and have remained unsolved for a long time, namely the lack of requirements for CPD/CE and the unregulated pre-registration training. The conflict of interest inherent to the JPA's dual role as both regulatory and professional body, presents a situation in which patient safety is undermined by pharmacists' self-interests. Due to government pressure prompted by a series of national healthcare professional regulation failures, the United Kingdom's former Royal Pharmaceutical Society of Great Britain (RPSGB) was split in 2010 into a professional leadership body (RPS) and the General Pharmaceutical Council (GPhC), a separate pharmacy regulatory and registration body. Earlier in 2004, New Zealand's government legislated against healthcare professionals' self-regulation, driving the split of the Pharmaceutical Society of New Zealand (PSNZ). These examples, coupled with the current situation in Jordan, demonstrate that a profession may be best served by the separation of its regulatory and registration functions on the one hand, and its representative and professional leadership function on the other. Despite it being considered one of the defining 'traits' of professions, self-regulation has always been subject to criticism – raising major accountability and conflict of interest concerns (Ogus, 1995, Moran and Wood, 1993). On the other hand, it is argued that without 'competent' self-regulation, true professional dominance cannot be assured (Irvine, 1997). The concept of achieving competence in self-regulation is, however, questionable in health professions where patient interests are constantly positioned to be weighed against the professionals' own self-interests, and are thus bound to be sacrificed.

3.5.3.3 The limitations of professional theories

Self-regulation highlights not only the limitations of the trait approach, but also those of the interactionist theorists who place the power dynamics of professionals at the heart of their theories. The conceptual framework presented in this study views the professional arena in terms of a list of three generic and broad sectors rather than focussing on 'interactions', 'functions' or 'definitions'. For example, the regulation component of the framework encompasses all and any parties with regulatory powers affecting the profession in question, be it self-regulatory or otherwise. This is an important aspect of the framework because it makes it

complementary to the reprofessionalization paradigm. Holloway et al. point to the fact that reprofessionalization emphasizes and respects the "processual and conditional nature" of occupational control, as opposed to the unilinear approach traditional theories take in determining the 'once-and-for-all' professional status of an occupation (Holloway et al., 1986). In turn, the structure of the framework and the dynamic relationships between its components respect and emphasize the processual nature of reprofessionalization. Another important aspect of the framework that lends it with an advantage over tradition theories of professions is its ability to be contextualized and accommodating of the varying characteristics of professional arenas. Any list of criteria borrowed from the trait theory for instance may not be work in more than one settings; a profession in one nation may not have a professional association, or a pre-licensing examination in the first place – in which case the trait theory will immediately disqualify it from the professionalization race. Indeed, the pharmacy community are warned from blindly relying on and supporting professional ideologies and professionalizing projects (Almarsdóttir et al., 2014). Efforts to do so may be deemed fruitless considering the lack of a universal consensus on what constitutes and defines a pharmacy profession; Traulson and Bissel (2004) instead rightly point out that pharmacy is in fact "embedded in the culture and the laws of the land where it is practiced".

3.5.4 Study Strengths and Limitations

The study identified a number of significant challenges that require urgent consideration by all stakeholders in Jordan, and particularly by governmental, regulatory and professional bodies. Before developing a professional vision, the need for change must be recognised and accepted (Tsuyuki and Schindel, 2008), and the researchers hope to have succeeded in establishing a sense of urgency around the necessary changes that must be undertaken. The researchers hope that this study's findings, and the resultant recommendations, will serve as a useful roadmap for informing and guiding current and future local professional initiatives and policymaking efforts. Further research into each of the issues identified is required to better understand and address them; local researchers and policymakers are therefore urged to consider formulating questions from the issues presented in this study and investigating them further. The researchers also urge regional and global researchers and stakeholders – particularly in developing countries where challenge-identification may be a challenge in and by itself – to employ the methodological approach used in this study in their respective contexts. The authors believe that the stakeholder-centric approach employed in conducting the research increased the validity and reliability of its conclusions, and the involvement of key policymakers increases the potential impact and implementation of the its findings and recommendations. In addition to the methodological design lending itself as a replicable example to pharmacy practice and health policy researchers, many of the issues highlighted in this study will have international resonance, thus potentially providing insights of value to health professions worldwide.

The researchers note that this study has several limitations. First, participant validation was found to be a logistically challenging method; the lead researcher, LRB, could only hold the focus groups on one particular day and this may have disallowed many participants from taking part. Despite the difficulty in re-engaging the entire original sample, the researchers believe that the cooperation of any number of original respondents is valuable. Second, the authors recognise that the sample of participants does not represent the total population of the

pharmacy population; additionally the non-recruitment of other stakeholder groups such as patients and other healthcare professionals may have affected the breadth of views presented. Therefore, caution should be used in drawing conclusions from the results of this study. The third limitation is related to data translation. Taking into account time and cost constraints, maximal measures were taken in this study to maximise the trustworthiness of the translation process, translating the source language to target language – particularly Arabic – is challenging and may have an impact on conceptual equivalence and this is an intrinsic limitation of cross-language research (Al-Amer et al., 2016).

3.6 Conclusion

This study has, for the first time, provided a holistic overview of the challenges facing the pharmacy profession in Jordan. It also presented a new conceptual framework that describes the relationship between three sectors of a professional arena: education, regulation and practice. The framework was used in a participant-centric study design to aid in understanding the challenges and devising appropriate recommendations for professional development. The framework was found to not only be a practical and effective interpretive and formative tool for research purposes, but also a modern and dynamic approach that may potentially redefine the way professions are viewed and guide the inevitable reprofessionalization processes necessary to the survival of healthcare professionals and their roles in ever-changing health systems.

Disclaimer

This study has been accepted as a Research Article by the Research in Social and Administrative Pharmacy journal (Impact Factor, 2014: 1.438), a leading international journal in the field of social pharmacy (Bader et al., 2016). Permission was sought from the editor to include an expanded version of the accepted paper as a chapter in this thesis (Appendix 26). Credit is also due to co-author Michael J. Rouse who contributed to this study by providing information (in writing) about the conceptual framework and provided critical feedback for the chapter/paper.

Chapter 4 STUDY II The Workforce: Profile, Trends and Intelligence



4.1 Introduction

HRH management and planning is essential to any healthcare system and is critical in providing a high quality of healthcare (Kabene et al., 2006); and unresolved workforce issues do not only affect the overall system but may also negatively impact the feasibility and sustainability of health reforms (Fritzen, 2007). The World Health Organisation's (WHO) World Health Report (2006b) highlighted the importance of strategic needs-based workforce planning for an effective HRH system. HRH in the Eastern Mediterranean Region (EMR) remains an undeveloped field and sufficient evidence to inform health sector reform is lacking. In the low and middle income countries of the region, as in other developing regions of the world, HRH typically suffers from poor planning and management, geographic and sectoral distribution imbalances, limited educational and training capacities, workforce shortages and underemployment, and the lack of workforce intelligence required to inform needs-based planning (El-Jardali et al., 2010, El-Jardali et al., 2007).

As a result of these persistent challenges, researchers have urgently called for the generation of research on the health workforce in the EMR (El-Jardali et al., 2007) and priority areas for research include improving planning and management and the development of minimum databases (El-Jardali et al., 2010). Despite this, HRH literature on EMR health workers remains scarce; and where it is available, it primarily concentrates on the medical and nursing professions (El-Jardali et al., 2007, El-Jardali et al., 2009). On the other hand, markedly less is reported about pharmacy workforce issues in the region(Hasan et al., 2011). While research

into pharmaceutical human resources and pharmacy workforce issues has been garnering more global attention in recent years (Desselle, 2006, Wertheimer, 2014), considerably more is published about other health professionals (Schafheutle and Hassell, 2009). A systematic review of sixty-nine papers published between 1998 and 2008 identified several global trends affecting the pharmacy workforce globally, including increased feminization and overall distribution imbalances (Hawthorne and Anderson, 2009). In addition to calling for a "more coordinated monitoring and modelling of the pharmacy workforce worldwide", the review also distinctly found that "there were significant shortfalls of published information regarding the pharmacist workforce in developing nations" compared to more developed countries.

Systemic efforts to address this literature gap and build a global evidence base on the pharmacy workforce and its issues are best exemplified by the International Pharmaceutical Federation's (FIP) 'Global Pharmacy Workforce Reports'. The FIP has so far produced three such reports in 2006, 2009 and 2012 based on survey data collected from 34, 56 and 90 countries and territories respectively. The 2006 Global Pharmacy Workforce and Migration Report (International Pharmaceutical Federation, 2006) was the first to highlight issues and trends affecting the pharmacy workforce globally; in it, a number of calls for action for pharmacy regulators and policymakers to strengthen their strategic planning and workforce data systems were made. The 2009 FIP Global Pharmacy Workforce (International Pharmaceutical Federation, 2009) Report strongly recommends that pharmacy workforce planning be integrated into the broader national health workforce planning and the 2012 FIP Global Pharmacy Workforce Report (International Pharmaceutical Federation, 2012a) stresses the importance of a 'needs-based' approach in the development of a locally relevant workforce plan. Based on the results of these reports, a Global Pharmacy Workforce Observatory (GPWO) was established 2013. Hosted by the United Kingdom's Royal Pharmaceutical Society on behalf of the FIP, the online database platform aims to serve as a permanent contemporary databank for global workforce intelligence.

Trends analysis of global pharmacy workforce data by the International Pharmaceutical Federation (FIP) found that the EMR's mean pharmacist density per 10,000 population has

increased remarkably by 38.5% between 2006 and 2012 (International Pharmaceutical Federation, 2012a). Jordan in particular exhibited the highest density regionally and the third highest density globally in 2012, at 20.87 pharmacists per 10,000 population compared to the 6.02 sample mean of 82 countries and territories around the world. Despite the relatively high density recorded, not much is known about the trends, distribution and balance of Jordan's pharmacy workforce.

There is a dearth of published evidence on the pharmacy workforce, compared to other health professionals in Jordan. Official governmental reports on HRH, including those produced by the National HRH Observatory provide more in-depth information on physicians and nurses than any other professionals. A register of active and inactive pharmacists is managed by the JPA, and the JPA produces an Annual Report for its members, summarising their activities, and includes a statistical snapshot of the workforce's total number, as well as gender and geographical distribution for that year. However, the JPA provides no interpretation or empirical analyses of the register or its data. No workforce census studies have ever been conducted by the government, JPA or any independent researchers. And despite the large and growing workforce, there aren't any national or sub-national needs-based planning or management policies for Jordan's pharmacy workforce (Ministry of Health, 2011).

In 2010, licensed pharmacists and pharmacy technicians and assistants constituted 25% of the total health workforce (physicians, nursing and midwifery personnel and dentistry personnel) (Ministry of Health, 2011, World Health Organisation, 2015a). JPA register data lists a total of 15,191 Jordanian registrants at the end of 2014, 61% of whom were female, corresponding to a density of 18.3 pharmacists per 10,000 inhabitants. Between 2004 and 2014, the active workforce nearly doubled, to about 12,000 pharmacists (Al-Wazaify and Albsoul-Younes, 2005, Jordan Pharmaceutical Association, 2015a). Although the public sector comprises over 60% of all primary, secondary and tertiary healthcare facilities (excluding private medical practices and clinics) in Jordan, there is significant public-private distribution imbalance of pharmaceutical personnel. In 2014, only 7.6% of the total pharmacy workforce was employed in the public sector, a slight increase from 6.7% in 2005 (Al-Wazaify and Albsoul-Younes, 2005). The

majority of pharmacists (92.4%) were employed by the private sector, while the remainder worked in the public sector, either at the MoH (4.8%), RMS (2.3%) or university hospitals (0.4%) (Ministry of Health, 2014) .

Our first study found that stakeholders identify 'deficiencies in workforce planning' to be one of the major challenges facing the pharmacy profession as a whole in Jordan (Bader et al., 2014, Bader et al., 2016). A search of the literature identified only one other Jordanian research study that examines issues of the workforce. One survey-based study was conducted by Al Khalidi and Wazaify (2013) to assess the level of job satisfaction and job-related stress among community and hospital pharmacists in Jordan's capital Amman. It also set out to identify causes leading to dissatisfaction and stress. It found that almost a third (29.4%) of pharmacists would definitely not choose to do pharmacy again if they could start their career over. Hospital pharmacists were generally found to be more satisfied than their community counterparts, which the researchers attributed to the fact that community pharmacists were less likely to perform patient-oriented duties compared with their peers in clinical/hospital settings. Having more experience, dispensing more prescriptions, and feeling self-confident on therapeutic and clinical knowledge have all been associated with higher job satisfaction levels. The researchers also found that negative dynamics in the pharmacist-physician relationship have been identified as a stress factor. Other factors were reported to include the lack of formal career progression and development due, in part, to the absence of CPD/CE programmes.

There is even less published information about pharmacy assistants than on pharmacists. Although theirs is a legally-protected title, pharmacy assistants are not required to be registered or regulated to practice. Their role was deregulated upon the enactment of the provisional Drug and Pharmacy Law No 80 of 2001. According to Article 38 of the law, the title 'Pharmacy Assistant' only applies to (1) pharmacy assistants authorised by the MoH prior to the promulgation of the said law and (2) Jordanian graduates of public and private community colleges who hold a certified and accredited Pharmacy Assistant Diploma. There is no current register, and thus no available workforce data, on pharmacy assistants. The last published figure on pharmacy assistant numbers dates from 2008 and puts their national tally at 6,540

(Ajlouni, 2010). Without a central register of pharmacy assistants, there is little information about what proportion of the total workforce they occupy. Any questions about skill mix (the balance between work undertaken by professionally qualified staff and by support workers), are difficult to address.

4.2 Study Rationale

The growing size of the workforce, coupled with their expanding role and high accessibility to the public, mean that effective HRH planning of pharmacy workforce is central to strengthening the healthcare system. The lack of comprehensive data on pharmacists forms a gap in the national capacity for pharmaceutical human resources planning. Thus the generation of evidence to support pharmaceutical human resources planning strategies is vital. This study aims to improve the evidence base on the Jordanian pharmacy workforce by analysing workforce trends over the 2005-2014 time period and identifying any emerging workforce problems using the JPA's registration data. The study highlights gaps in the current registration data, and it discusses approaches to improving health workforce intelligence and datasets. It serves as both a driver and a basis for future workforce planning discussions and policies in Jordan and elsewhere. To our knowledge, this is the first study on Jordan's national pharmacy workforce data.

4.3 Methods

The national pharmacy workforce data, linked to the JPA registration data, was used. The JPA's register holds the most comprehensive and up-to-date source of data on the pharmacy workforce. The JPA provided me, the field researcher, with authorization to fully access and extract the above workforce data from an anonymised version of JPA's register. Registration data collected contained demographic information (age, nationality, gender and address) and details on educational qualifications, registration status, practicing status, and employment sector and status.

I was given a training session by a JPA staff member on how to use the database and carry out data queries. The data was retrieved during short pre-arranged visits made to the JPA's headquarters in Amman, Jordan between January 2014 and January 2015. The data was entered into Microsoft Office Excel 2010 and cross-checked for data entry accuracy by a JPA staff member. The analysis was supplemented with data on types and numbers of pharmaceutical facilities from the JPA and Ministry of Health. The cleaned data was analysed using Statistical Package for the Social Sciences (SPSS) version 22.0.

This exploratory study adopted both simple descriptive statistical and time-series analysis methods. Descriptive statistics were mainly used to provide the most up to date snapshot of the workforce as of the end of the 2014 calendar year. Simple frequencies and percentages were produced for workforce size, density, and gender distribution. The degree of variation in the workforce distribution across Jordan's 12 governorates was also described. Time-series analysis was carried out with the main objective of describing emerging workforce trends of the past decade. To explore relationships between variables, Pearson's product-moment correlation tests were performed. Statistical significance was determined at 0.05% confidence level.

The time series of this study spans the ten-year period beginning on 1st January 2005 and ending on 31st December 2014. Annual figures for each year cover the period from the 1st of January to the 31st of December. While non-Jordanian pharmacists make up 6.4% of all registrants, they were excluded from this study for two main reasons: 1) with a few exceptions,

only Jordanian nationals are legally allowed to practice and so the non-Jordanian cohort will not form part of the active workforce; 2) the JPA clarified that the usual reason behind their registration status is to receive honorary or professional recognition, which in turn facilitates registration in their countries of origin. Therefore, all figures from here on only describe the majority Jordanian cohort of the workforce.

4.4 Results

4.4.1 Workforce Growth Change

As of the end of 2014, there were 15,191 registered Jordanian pharmacists on the JPA's register. The majority 77.7% (n=11,798) are classed as 'active' registrants and 75.5%, (n=8,902) of all active pharmacists reside in Jordan. In other words, only about 60% of all registrants are active professionals residing in Jordan.

A ten-year trend analysis (Figure 4.1) found that the total number of Jordanian registrants has increased by 45.5% from 8,290 in 2005 to 15,191 in 2014, at an average annual growth rate of 6.5%. The number of actively practicing pharmacists has witnessed an identical growth of 45.4% during the same period (from 6,438 to 11,798). As for the number of active pharmacists residing in Jordan, a 49% increase (4,547 to 8,902) has been witnessed over the last decade.

The remaining 'inactive' pharmacists are either retired, deceased, suspended from register for fee non-payment or struck-off from the register permanently (for disciplinary offences). The majority (n=2781) of inactive pharmacists were suspended from the register for not paying their annual fees. The number of suspended pharmacists has sharply increased from 2013 (n=1769) due to stricter regulations on membership fee payment imposed that year.

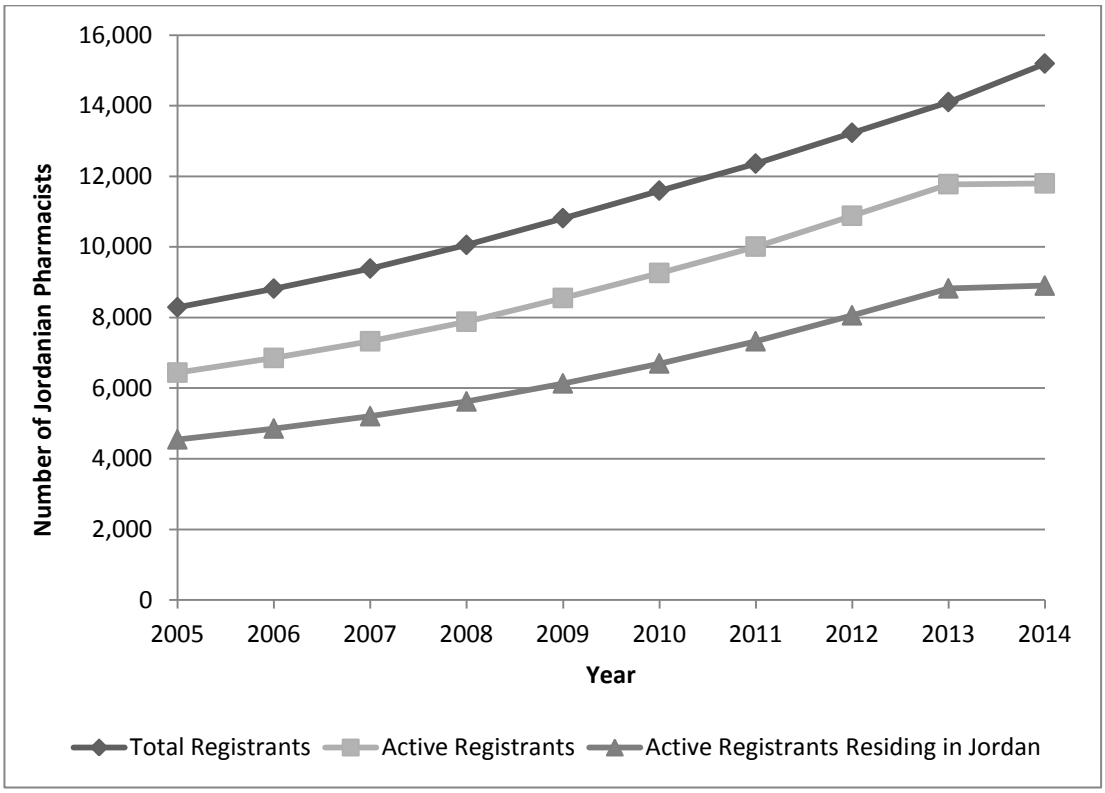


Figure 4.1 Growth change of total registrants, active registrants, and active registrants residing in Jordan (2005-2014).

The increase in the overall size of the register is attributed to more pharmacists entering the profession every year (Figure 4.2). At an average annual growth rate of 9.22%, the total number of newly registered pharmacists per annum has also increased steadily between 2005 (n=453) and 2014 (n=1114) and is significantly correlated with the total number of registered pharmacists (r=0.97, p <0.0001) and active pharmacists (r=0.94, p<0.0001). A strong correlation has been found, however, between the number of newly registered pharmacists and the influx of the first cohort of PharmD graduates in 2006 (r=0.84, p =0.003). Until then, the Bachelor of Pharmacy was the sole entry-level degree to the profession. As of the 31st of December 2014, 739 registered members held a PharmD degree.

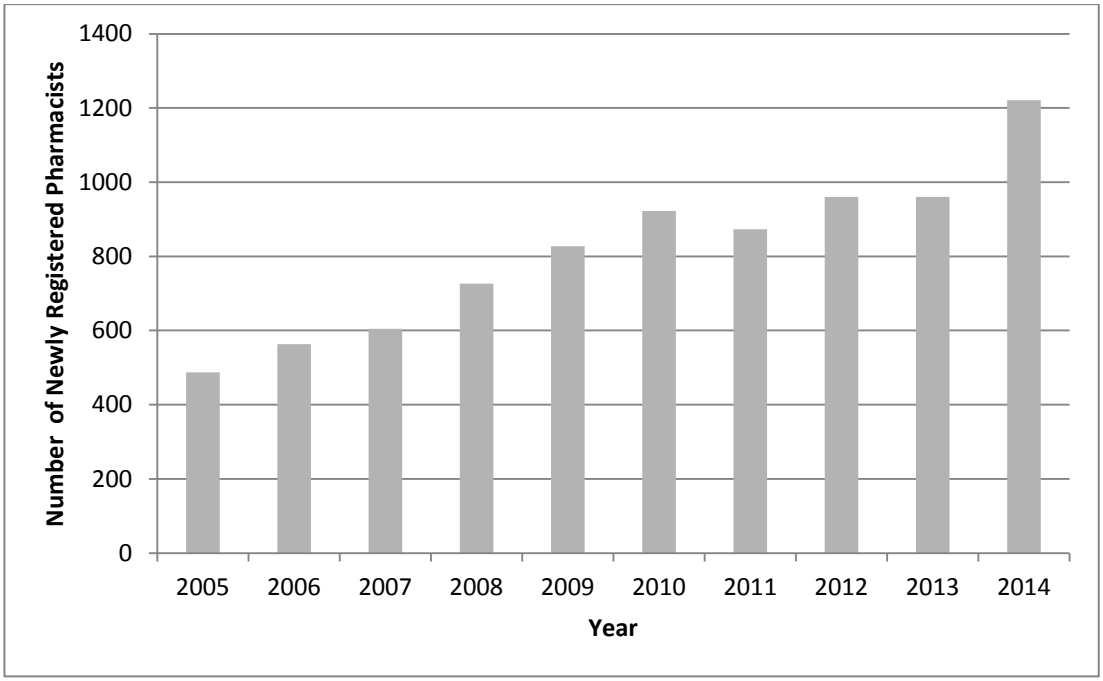


Figure 4.2 The total number of new registrants per year (2005-2014).

As Figure 4.3 below illustrates, the density of active pharmacists resident in Jordan per 10,000 population has also increased from 8.7 in 2005 to 13.3 in 2014.

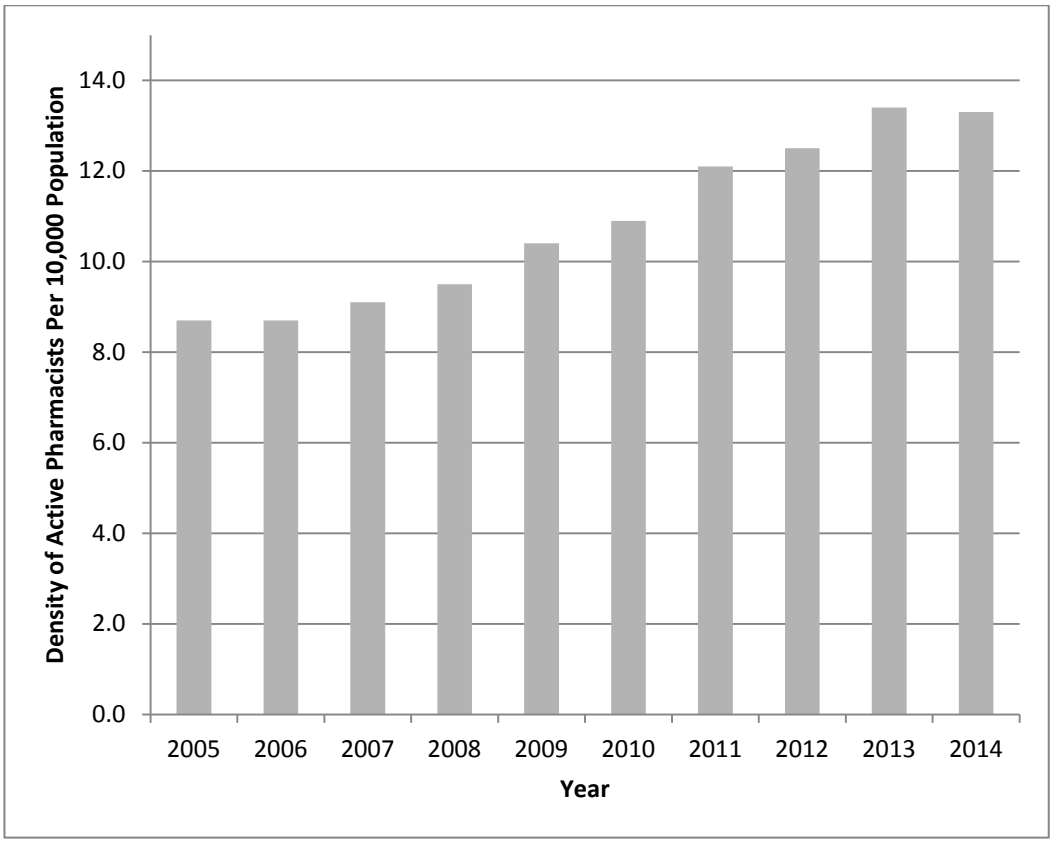


Figure 4.3 Density of active Jordanian Pharmacists resident in Jordan per 10,000 population.

4.4.2 Gender Distribution

The proportion of workforce gender mix shows increasing ratios of females in the profession over the past decade, where the proportion female increased by 16.5 percentage points between 2005 and 2014 (Figure 4.4). Females make up 60.9% of total registered pharmacists and 65.1% of actively practicing pharmacists in Jordan in 2014. This is an increase from 2005 figures of 51.6% and 56.2%, respectively.

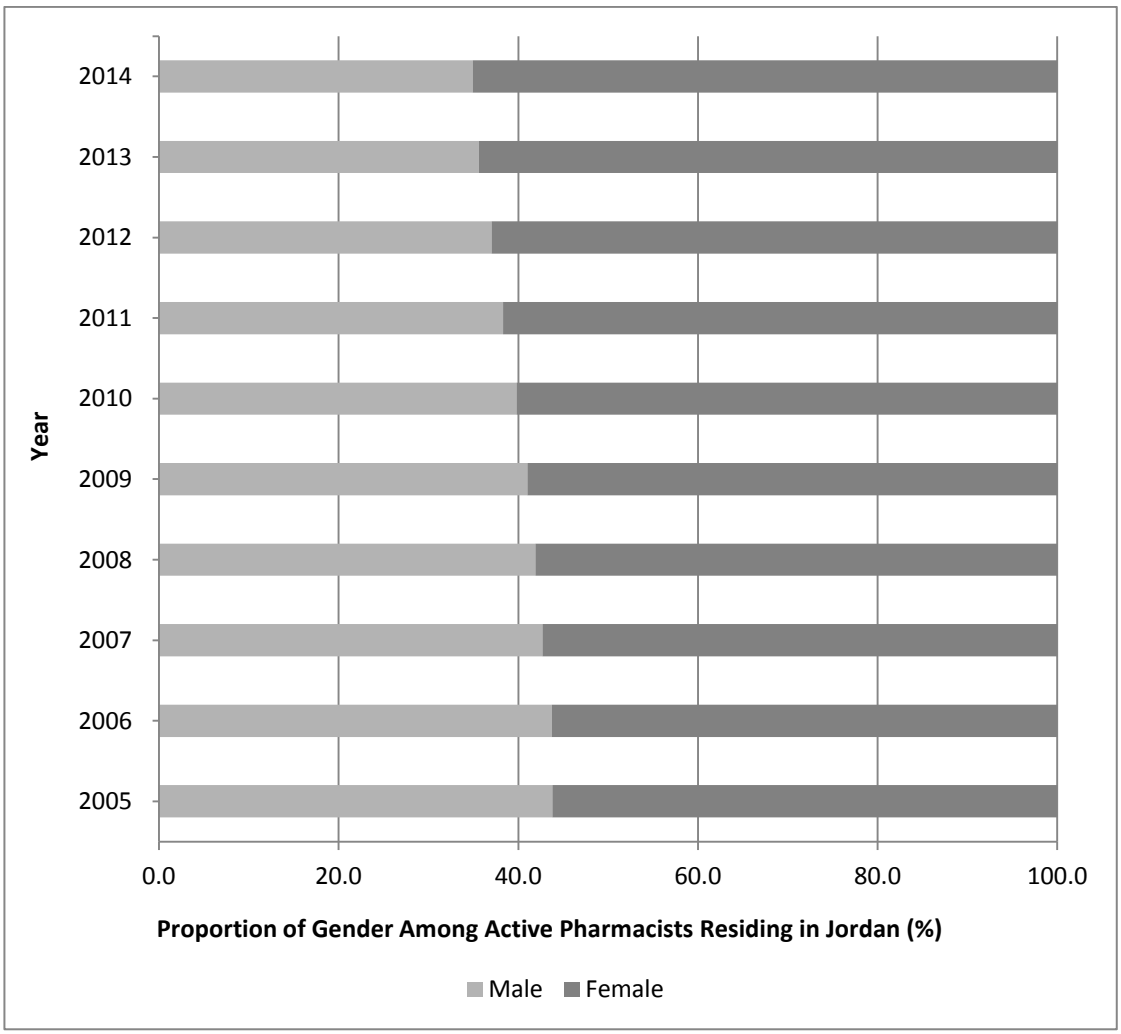


Figure 4.4 Active pharmacists gender distribution (%) (2005-2014).

The increasing female cohort of the workforce is significantly correlated to the increasing number of newly registered female pharmacists (R=0.920; p<0.0001). Figure 4.5 below also shows the total increase of the number of all pharmacists can be attributed to the increasing influx of female new registrants (r = 0.986, p < 0.0001). Conversely, there is no significant change in the total number of male pharmacists over years (r = 0.445, p = 0.197).

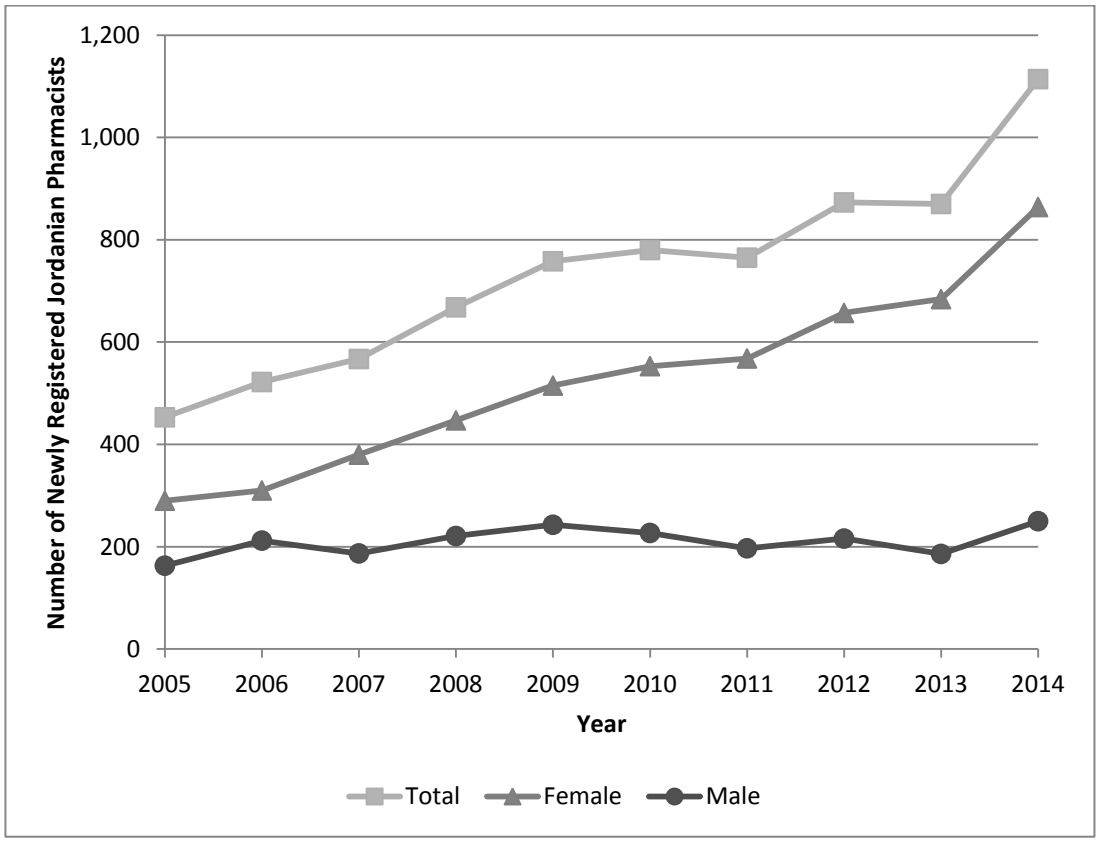


Figure 4.5 Growth change of female, male and total newly registered pharmacists (2005-2014).

4.4.3 Geographical Distribution

In 2014, almost a quarter of all registered pharmacists (24.9%) had a registered address outside of Jordan. This is lower than the proportion (28.9%) classed as 'overseas' in 2005.58.6% of active pharmacists Jordan had registered addresses inside Jordan. There is a significant decrease ($r=0$-$.95$, $p<0.0001$) in the proportion of pharmacists residing abroad over the 2005-2014 period. The proportion of overseas pharmacists has been steadily decreasing with a negative annual growth rate of -1.6% between 2005 and 2014. Females made up 55.2% of overseas pharmacists in 2014, a slight increase from 47.4% in 2005.

Table 4.1 below lists the number of active pharmacists and community pharmacies by governorate. As the table shows, the density of pharmacists varies considerably between governorates ranging from 0.6 in Irbid to 72.8 in Jarash. The capital governorate, Amman, is the most densely populated at 38.7% of the country's population; it also hosts more than 70% (n=8388) of the total active workforce. In stark contrast, five out of the twelve governorates (Irbid, Karak, Tafiela, Ma'an and Aqaba) have less than 100 actively practicing pharmacists in each. These pharmacist density variations are further illustrated in Figure 4.6. The results may not reflect reality accurately though; the JPA's data on pharmacists per governorate is related to their residency as opposed to their work location. The relatively short distances between the governorates make it highly likely for pharmacists to commute to work. A similar trend is found with the number of community pharmacies, of which more than half (n=1237) are situated in the capital governorate. Although the geographical distribution is unequal, on average, there is one community pharmacy for every 2984 inhabitants. The capital governorate Amman has the highest density of community pharmacies (n=4.8) per 10,000 population. This is followed by Zarqa (n=3.0), Madaba (n=2.8), Balqa (n=2.7) and Jarash (n=2.2) governorates which are all immediately adjacent to the capital. Ajlun has the lowest density with less than one pharmacy for every 10,000 residents.

Governorate	Estimated population[1] (%)	Number of active pharmacists[2] (%)	Density of pharmacists per 10,000 population	Number of community pharmacies (%)	Density of pharmacies per 10,000 population
Amman	2584600 (38.7)	8388 (70.2)	32.5	1237 (55.3)	4.8
Balqa	447200 (6.7)	853 (7.1)	19.1	122 (5.5)	2.7
Zarqa	994500 (14.9)	420 (3.5)	4.2	298 (13.3)	3.0
Madaba	166900 (2.5)	139 (1.2)	8.3	47 (2.1)	2.8
Irbid	1188100 (17.8)	72 (0.6)	0.6	314 (14.0)	2.6
Mafraq	313700 (4.7)	145 (1.2)	4.6	61 (2.7)	1.9
Jarash	200300 (3.0)	1459 (12.2)	72.8	44 (2.0)	2.2
Ajlun	153500 (2.3)	191 (1.6)	12.4	13 (0.6)	0.8
Karak	260400 (3.9)	44 (0.4)	1.7	46 (2.1)	1.8
Tafiela	93400 (1.4)	41 (0.3)	4.4	12 (0.5)	1.3
Ma'an	126900 (1.9)	94 (0.8)	7.4	18 (0.8)	1.4
Aqaba	145500 (2.2)	99 (0.8)	6.8	25 (1.1)	1.7
Total	6,675,000	11,945	22.5	2237	3.4

Table 4.1 Geographical distribution of active pharmacists and community pharmacies by governorate.

[1] Estimated population end-year 2014 figures obtained from the Department of Statistics.

[2] Percentages do not add up to total due to rounding.

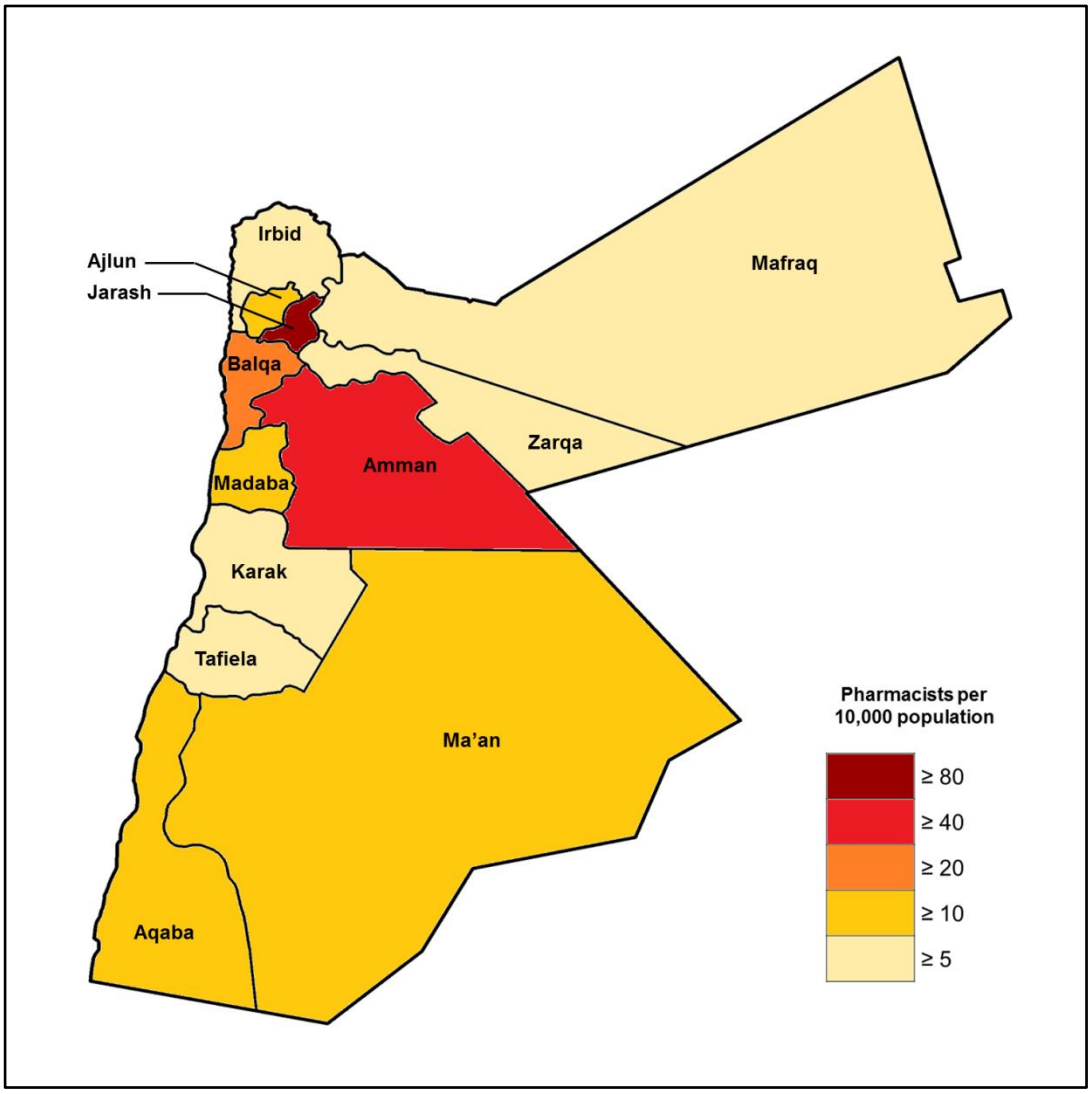


Figure 4.6 Density (per 10,000 population) of active pharmacists by governorate.

4.4.4 Sectoral Distribution

Data on workforce distribution by sector are available for the public sector only and provided by the MoH (described in the Introduction above). There are no readily available and categorised data on workforce distribution by practice areas (e.g. clinical, academic, industrial, etc.).The JPA's register does however list whether a member is an employee, owner of a community, or owner of a drugstore (i.e. wholesaler). Table 4.2 below includes this information for all and active registrants.

The table also includes a breakdown of gender for each level. The Jordanian pharmacy workforce is female-dominated as was illustrated above. This is true for all those employed; 71.9% of active employees are female (n=5,099). However, a closer examination of facility ownership data reveals that the proportion of all female registrants who are community pharmacy owners or wholesale business owners is less than that of their male counterparts – 46.2% and 31%, respectively.

Employment category	All registrants (%)	Active registrants (%)
Employee	9,328 (100)	7,091 (100)
Female	6,388 (68.1)	5,099 (71.9)
Male	2,940 (31.9)	1,992 (28.1)
Pharmacy Owner	2,108 (100)	1,874 (100)
Female	973 (46.2)	896 (47.8)
Male	1,135 (53.8)	978 (52.2)
Drugstore Owner	306 (100)	265 (100)
Female	95 (31.0)	85 (32.1)
Male	211 (69.0)	180 (67.9)

Table 4.2 Distribution of all and active registrants by employment category.

4.5 Discussion

4.5.1 Key Findings

The past decade witnessed a steady growth of the pharmacy workforce with the number of total active pharmacists in Jordan increasing almost two-fold in the last ten years. This is not surprising considering the parallel increase in the number of pharmacy schools in the same period; eight new pharmacy schools opened, bringing the total of licensed schools to 14 (5 public and 9 private).

Gender and distribution trends exhibited in Jordan are in line with global pharmacy workforce trends of increased feminization and multi-level distribution imbalances (Hawthorne and Anderson, 2009). Workforce imbalances affect not only pharmacy but most healthcare professions and are a major concern in both developing and developed countries (Zurn et al., 2004).

Geographical imbalances describe disparities between urban/rural and/or rich/poor regions, and gender imbalances describe disparities in female/male workforce representation and institutional or service imbalances can be found in the varied distribution of pharmacists between healthcare facilities or services (e.g. public versus private sectors).

The findings strongly suggest that the Jordanian pharmacy workforce exhibits classic problems of imbalance. The findings of this study closely correspond with research findings suggesting that low and middle income countries in the EMR suffer from "major geographical and sectoral mal-distribution" of health workers in general (El-Jardali et al., 2010).

4.5.2 Geographical Distribution Imbalance

Geographical imbalance is a worldwide problem affecting all healthcare professionals in both developing and developed countries (Dussault and Franceschini, 2006) and the regional variances in pharmacist and pharmacy density indicate a clear imbalance in the geographical distribution of pharmacists between Jordan's 12 governorates. Data indicates that the capital and neighbouring governorates are the densest with both pharmacists and pharmacies. The exact reasons behind the regional imbalances of Jordanian pharmacists are not known but previous research suggests that this concentration pattern is characteristic of developing countries (Zurn et al., 2004) where health professionals such as pharmacists prefer to work in cities rather than rural areas (Azhar et al., 2009, Smith, 2004). Reasons may be driven by family and social ties, professional ambitions and financial incentives (Zurn et al., 2004). As a result, developing countries are often said to suffer from 'urban bias'- a situation in which the political and economic forces of a country reinforce provision of services and investments in urban areas, reinforcing disparities in health access and outcomes (Fritzen, 2007, Dussault and Franceschini, 2006). In Jordan, the rural population is poorer and more disadvantaged, with fewer health services and less access to safe water and sanitation (World Health Organisation, 2008). While our study clearly indicates a regional imbalance, urban and rural imbalances require greater investigation to better understand the factors behind it, its effects on equitable service provision and what needs to be addressed to encourage pharmacists to work in such areas. Policies that may be effective in addressing the regional disparities may include setting higher rates of payment in understaffed regions as a way of attracting pharmacists to work in these deprived regions (Agartan, 2015).

Our study shows that a significant proportion of the workforce resides overseas. Supporting evidence suggests that Jordanian pharmacists make up a large proportion of the workforce in neighbouring countries especially those in the Gulf Cooperation Council (GCC) such as the UAE (Hasan et al., 2011) and Qatar (Kheir and Fahey, 2011). While specific reasons behind Jordanian pharmacists' overseas migration are not exactly known, reasons for the migration of EMR health workers may include better financial and non-financial incentives(El-Jardali et al.,

2010). Other postulated reasons for health worker migration from developing countries in general include being underpaid, poorly motivated and increasingly dissatisfied and sceptical (Zurn et al., 2004). It is impossible to objectively assess the impact of international migration on health systems without clear evidence (Gupta et al., 2003). However, the data suggests that the rate of out-migration is slowly decreasing. This may be attributed to the increasing self-reliance of those recipient countries on training and employing their own pharmacists explained by a surge in the number of new pharmacy schools and programs in those countries (Kheir et al., 2008).

4.5.3 Gender Distribution Imbalances

An examination of the gender distribution revealed a workforce characterized by a dominating presence of women. The female-dominated pharmacy workforce in Jordan reflects the general worldwide gender mix of the pharmacy, which has traditionally been considered a female-friendly profession (Janzen et al., 2013). While most pharmacists who are employees are female, our study shows that business ownership roles in particular are male-dominated, more so in wholesale business ownership than in community pharmacy ownership. This fact may point towards an underrepresentation of female pharmacists in managerial and decision-making positions, which may contribute to a poorer understanding of any specific problems pertaining to women (Zurn et al., 2004).

4.5.4 Sectoral Distribution Imbalances

More detailed information was publicly available on public sector distribution compared to private sector distribution. The former information is held and supplied by the Ministry of Health while the latter falls within the JPA's domain. The uneven distribution of pharmacists with respect to work sector (private/public) also echo trends of the pharmacy workforce globally (Hawthorne and Anderson, 2009). The concentration of the Jordanian pharmacy workforce in the private and public sector resonate with the wider regional trend; research suggests that health workers in the region prefer to work in private sectors may be due to the higher wages offered compared to the public sector (El-Jardali et al., 2010).

4.5.5 Gaps in Workforce Information

Our study's secondary aim was to highlight any gaps in the current registration data and discuss tools and approaches to improving the workforce intelligence. Obtaining quality workforce intelligence is a baseline pre-requisite to understanding workforce problems and establishing local human resource needs. While a human resource information system (HRIS) is critical for evidence-based human resource policy and practice and for tracking and monitoring purposes (Riley et al., 2012), existing sources for workforce data tend to be underutilised in research (Gupta et al., 2003). One essential and central component of a functional HRIS is the health workforce registry; health workforce registries contain authoritative and important information on health worker attributes and data on their production and distribution that are crucial for planning, research and development purposes. Most countries have health workforce registries in some form but it is common to find that they are "not standardized, updated, reliable, centralized or in electronic form" (World Health Organisation, 2015c); in developing countries in particular, information on human resources is often incomplete or unreliable (Spero et al., 2011, Rao et al., 2012).

Our research study's unprecedented access to the JPA's register allowed us to assess the quality of the data collected on the country's pharmacists. We have identified several information gaps in the workforce's intelligence. Limited information is available on employment practices: working time (e.g. part-time, full-time, occasional etc.) or occupational categories (e.g. community, hospital, industry etc.). A clear picture of attrition will not be available unless more information on working time is collected and the accurate presentation of full-time equivalent workforce is not possible; and without occupational categories, true attrition in the form of permanent loss from the workforce due to changing employment to a field outside pharmacy cannot be calculated (Riley et al., 2012). Additionally, understanding the occupational distribution of the workforce will lead to better utilization of existing pharmacists within their legislated scope of practice. Total figures on employees are available but there is no information about those unemployed and how many among them are seeking or not seeking employment. While individual member records may list employment details of registrants, these are only

manually retrievable and not usable for analysis on a large scale. It is worth noting that the 'active' status does not indicate practicing status; for instance, an unemployed pharmacist is classified as 'active' on the register as long as he/she doesn't meet any of the four 'inactive' categories. The lack of thorough information on employment and practicing statuses may indicate that the current 'active' total overestimates the actual available workforce. At face value, the relatively high density of pharmacists in Jordan compared to global and regional averages may indicate that the size of the workforce is sufficient; but the lack of demand-based data, or the number of pharmacists Jordan needs to meet population health needs, the basic question of whether there is a shortage or surplus of pharmacists in Jordan cannot be answered. Additionally, the availability of data on occupation, working time and earnings would specifically allow for a more detailed analysis of gender equality in the labour workforce (Gupta et al., 2003). Given the dominance of women in the workforce, this additional analysis of gender differences would be especially important.

Several HRH tools exist that particularly address this issue; the WHO's Minimum Data Set for Health Workforce Registry serves as a standard-based tool for the development or modification of an existing health registry; and employment status, employment title and occupational category are among the essential data elements (World Health Organisation, 2015c). Similarly, the National Center for Health Workforce Analysis, part of the U.S. Department of Health and Social Services, produced a Health Workforce Minimum Data Set (MDS) which provides basic, minimum, consistent guidelines for fundamental health workforce planning. It stipulates that practice information data should also include number of positions, hours by activity and practice location. Expanding the existing register by filling these gaps in information is essential not only for developing a quality registry but to also better inform workforce policies.

4.5.6 Workforce Planning and Management

The absence of appropriate human resources was found to be responsible in many countries for a chronic imbalance with multifaceted effects on the workforce (Dussault and Dubois, 2003) and the absence of workforce management will hinder the existing workforce from providing their best quality service (El-Jardali et al., 2007). As mentioned earlier in this chapter, pharmacy workforce planning strategies or policies do not exist in Jordan, nationally or sub-nationally. In the Ministry of Health's Strategic Plan 2013-17, strategic objectives for the development of HRH are stated. However, technical development is not addressed and the strategy does not include an actual working plan or address pharmacy in any way. The JPA oversees at least 19 separate committees; each is composed of a team of pharmacists dedicated to developing or representing a workforce issue or group, respectively (e.g. Pharmacy Owners Committee, Continuing Professional Development Committee, Good Pharmacy Practice Committee etc.). There is not one committee for workforce planning and management.

The expansion of pharmacy schools and the subsequent and continuing growth of the workforce poses a challenge to local planners who need to consider the current and future market's capacity to accommodate the rise in the number of pharmacists (Covvey et al., 2015). Traditional health workforce planning has tended to focus on supply and demand but accurately forecasting supply and demand is challenged by the long lead times needed to train pharmacists (International Pharmaceutical Federation, 2012a). Employing workforce planning that focuses on utilizing the existing workforce, delivering patient outcomes, and being integrated with the broader human resources for health planning may be a better strategy. Pharmacy assistants are a crucial part of any pharmacy team and one that should be accounted for and included in any pharmaceutical human resources plan. It is important to note there are no registration requirements -and thus no workforce data- on pharmacy assistants. The last published figure on pharmacy assistants was 6,540 in 2010.

An effective needs-based pharmaceutical human resource plan requires multi-stakeholder collaboration based on a proper needs assessment and on further evidence-based research. Any future plans must not only involve all stakeholders and policymakers but should also ensure

the effective participation of pharmacists and pharmacy assistants as health professionals, to ensure implementation and to prevent unwarranted negative consequences on the workforce itself (Agartan, 2015).

4.5.7 Implications for Researchers and Policymakers

Our longitudinal analysis of the JPA's registration database could help enhance the understanding of researchers and policymakers on employment patterns and attrition rate from the workforce. While the study analyses the geographical distribution of pharmacists and pharmacies, no conclusions can be made from the results on geographic access. Further studies into the geographic access of pharmacies to rural versus urban communities may be benefit from geo-coding pharmacies according to their exact location (Law et al., 2011).

Our experience with collecting data from the JPA's register concluded that it is not user-friendly. Every frequency extracted required a number of commands to be entered manually. This fact coupled with the limited allocated time allowed for the researcher's visits, this was a long and laborious procedure. Providing a publicly-available anonymised version of the JPA's register would allow more researchers to conduct further studies and analyses (Saleh et al., 2009). The researchers hope that the information presented in this study -especially those related to gaps in workforce data- will serve to inform future efforts directed towards workforce planning.

4.5.8 Study Strengths and Limitations

Our study has three main strengths: (1) we provide the most comprehensive overview of the pharmacy workforce in Jordan to date; (2) to the best of our knowledge, we are the first researchers to access and analyse the national workforce registration data managed by the JPA; and (3) our study is in alignment with a regional research priority area, directly contributing to the thin evidence base on HRH in EMR (El-Jardali et al., 2010). Country-based research studies such as this provide guidance not only for policymakers on a local level, but also widen the evidence base on the regional and global level(Omaswa, 2014).

With our source being the only registry for pharmacists in Jordan, our limitations mainly lie in the data's integrity and caution should therefore be exercised when interpreting results. Pharmacists are asked to inform the JPA of any changes to their status but the lack of any license renewal mechanisms (i.e. renewal forms) may mean that the data kept by the JPA is not always up to date. While it is mandatory for pharmacists to register before practice, some practice settings (e.g. industry) do not always require proof of registration/licensing and so an unknown portion of the actual active workforce may not be represented in the data.

The official population statistics used in this study may underestimate the true population of Jordan; global sources list higher 2015 estimates ranging between 7 to over 8 million due to the increased influx of Syrian refugees and pharmacist density figures described in this study may therefore not reflect reality accurately.

Additional caution must be exercised when drawing conclusions from this study as measuring pharmacist workforce based on registration data was found to significantly overestimate the available workforce (Mak et al., 2013). Without supporting workforce data through national surveys or censuses, the accuracy and reliability of JPA's registration will remain questioned.

4.6 Conclusion

The results of this study provide the most comprehensive picture to date of the pharmacy workforce in Jordan. It has identified interesting and perhaps worrying trends in the data such as the steady growth of the workforce amidst a clear imbalance across gender distribution, geographical location and service sectors. The JPA is a valuable national source of information on the country's pharmacists but several gaps in workforce information were identified, limiting its current functionality as a reliable source for strategic workforce analysis, planning and management –which are all urgently needed.

Chapter 5 STUDY III Education: Academic and Institutional Capacities



5.1 Introduction

HRH capacity building cannot be achieved without scaling up the workforce's education and training efforts (Frenk et al., 2010, World Health Organisation, 2013). According to WHO guidelines, active monitoring and evaluation of changes in HRH education and training trends is essential to keep policymakers and stakeholders informed, as well as to improve the implementation of transformative changes. Accordingly, a solid evidence base on workforce supply trends and characteristics is needed to drive and guide scaling-up and development initiatives (Chen et al., 2004). Moreover, all "valid and updated information is needed in an easily accessible and interpretable format" (World Health Organisation, 2013).

In this context, a Global Evaluation Toolkit for Health Workforce Education, currently being developed and tested by the WHO, encourages countries to monitor their health worker education systems. Its indicators serve as a complementary expansion to the 2013 guidelines on transforming and scaling up health professionals' education and training (World Health Organisation, 2015e).

Pharmacists are often perceived to be the most accessible – in some cases, the only – providers of medicines' advice and other health services (Anderson et al., 2010). Indeed, pharmacists in a wide range of sectors and health settings can positively impact health outcomes, not only of patients but of the general population at large (Dent et al., 2007, Wubben and Vivian, 2008, Hanlon et al., 2004, Murray et al., 2007, Machado et al., 2007). In light of this, it is important to

understand the sector that supplies and prepares this workforce, namely the initial (or pre-service) education and training providers. Gathering reliable data on the sector's institutional and academic capacities is a critical stepping stone towards ensuring the quality delivery of health services by the pharmaceutical HR. A 2013 review by Babar et al. found a limited number of empirical publications on pharmacy education in low- and middle-income countries. However, most of these were letters to the editor, commentaries or viewpoints, which confirms the need for greater research efforts to bridge the gaps in the current literature, notably in terms of the implications for educational policy and practice.

The International Pharmaceutical Federation Education Initiative (FIPEd) aims to bring about transformational changes to professional pharmacy, pharmaceutical sciences and pharmaceutical education, so as to meet current and future healthcare needs around the world. Building on the success of the 2008-2010 Action Plan initially implemented by the FIP-WHO-UNESCO Pharmacy Education Taskforce, FIPEd has since conducted a number of studies and produced several publications in line with the Action Plan's four main domains: institutional and academic capacity, quality assurance, competence framework and a vision for pharmacy education (Anderson et al., 2009a, Anderson et al., 2010, Anderson et al., 2008a).In the absence of a comprehensive knowledge base on pharmacy institutions and workforce production, academic and institutional capacity was recognised early on as a priority area for research and development by the Taskforce. To build the global evidence base on the production of pharmacists, as well providing guidance for capacity building, FIPEd conducted a Global Education Survey in 2013. Findings from the survey were published in the FIPEd Global Education Report (2013), "the first publication of its kind to provide a baseline on the current status, transformation and scaling up of pharmaceutical education worldwide" (Anderson et al., 2014).

Empirical research on pharmacy schools in Jordan remains scarce, with most of the literature consisting of commentary articles (Al-Wazaify and Albsoul-Younes, 2005, Al-Wazaify et al., 2006). Only a single research article was found to explore the state of pharmacy education in the country. Kheir et al. (2008) conducted a review of pharmacy education and practice in

thirteen (13) Middle Eastern nations, which featured an examination of Jordan's then-network of eight pharmacy school. In the years since the study's publication, the number of schools has almost doubled and the field has almost certainly undergone substantial changes. The need to conduct an up-to-date exploration of the current state of pharmacy education in Jordan is thus self-evident.

5.2 Study Rationale

This study uses the FIP's Global School Survey to describe the state of pharmacy education in Jordan and explore the academic and institutional capacity of the country's pharmacy schools. In particular, the study provides baseline information on the schools' history, ownership profile, staffing levels, student numbers, academic programmes on offer, as well as other supplementary information; all of which is intended to paint a comprehensive picture of the current status of the sector. These results are then interpreted to identify and discuss notable changes and emerging trends in the field. To the best of our knowledge, this is the first empirical national-level study of pharmacy education in Jordan.

5.3 Methods

5.3.1 The Global School Survey

The FIP Global Education Survey conducted for this study was undertaken between January and April 2014. The survey instrument seeks to collect data on the initial education and training of pharmacists, and was the result of a collaboration between the FIP Collaborating Centre at University College London, the School of Pharmacy at the University of Nottingham, FIPEd and the WHO's HRH staff. The questionnaire was made available in English, French, Portuguese, Arabic, Japanese, Chinese and Spanish. Following its use for the 2013 FIPEd Global Education Report, the survey was also deployed in a research study by Chanakit et al. (2014), who used it to explore the state of pharmacy education in Thailand.

In the present study, an expanded version of the original survey instrument was used (See Appendix 27). Although the original tool provided a useful starting point in terms of baseline information, it needed to be adapted to address the more in-depth requirements of the present case study. The revised survey would thus provide a more comprehensive overview and cross-sectional snapshot of the educational system. Key changes introduced into the survey instrument include expanding the questions on academic and graduate statistics and demographics. Permission to use this revised version was sought, and obtained, from FIPEd.

5.3.2 Pilot Work

I was tasked with translating the Global School Survey from English to Arabic, and the resulting translation was distributed to all Arab nations by FIPEd in their Global Report. I also visited Jordan for two weeks in April 2012 (prior to commencing the PhD) to collect data for the International Pharmaceutical Federation (FIP) Global School Survey (Version 2012). Nine out of ten institutions were visited, and interviews with deans were conducted with a view to answering the survey questions. This experience was highly valuable as it provided significant insights with regards to several aspects of the survey collection method, which included:

1. Most deans were reluctant to release official numbers, such as student and staff number and demographics (e.g. nationality and gender), relating to their institution.

2. School deans willing to provide this data were still required to seek permission from the university management. In cases where the data was provided, it was limited and hardly answered any of the questions in the survey.
3. In a number of instances, deans 'skipped' answering several questions because "all the information was on the school website".

5.3.3 Data Collection and Analysis

The results of the pilot fieldwork conducted in 2012 confirmed that a more practical approach to data collection was needed for this project. A triangulation approach was adopted in completing the surveys, using multiple sources to extract primary and secondary data that converged. The use of multiple sources to answer a list of standard questions was previously used by researchers to collect and validate information in large-scale studies involving pharmacy schools (Kheir et al., 2008). All of the collected data reflected the status of pharmacy education in the 2014/2015 academic year, which typically runs from the beginning of the fall to the end of summer.

As a starting point, university and school websites were first accessed for information. This source of data usually included information on available programmes, admission requirements, tuition fees and course study plans and syllabi. Official statistics and administrative data were then collected directly from (1) the Ministry of Higher Education Scientific Research (MoHE) and (2) the Higher Education Accreditation Commission (HEAC). Both sets of data provided detailed statistical and demographic information on academic staff and students across all schools. Information on Accreditation and Quality Assurance were also obtained from these sources. Finally, programme/school representatives (usually deans) were contacted to validate the accuracy of the data obtained from the two sources above, and to help address any gaps in the data.

This study defined a pharmacy school as any college or faculty that offers at least one type of pharmacy or pharmaceutical science degree. Only schools with enrolled students were considered. Accordingly, only accredited pharmacy schools (n=14) were surveyed for this study.

The College of Pharmacy at Jadara University, established in 2015, had no enrolled students as the school is still awaiting official accreditation, and was thus excluded from the study.

Taking steps to ensure to minimize non-response are especially important in small populations which necessitate high response rates (Draugalis and Plaza, 2009). For a small population, sampling is not usually considered; in fact, survey research of pharmacy schools should take the form of a 'census' where all population members are queried (Mészáros et al., 2013). All 14 schools were surveyed.

Three separate attempts were made to contact each school's representative, in order to confirm the validity of the collected data, after which the data collection would stop. At the end of the study, twelve out of the fourteen schools were successfully contacted. The data were collated using Microsoft Excel, and a set of summary tables were produced to aid the interpretation and analysis process.

5.4 Results

5.4.1 Pharmacy Schools Overview

More than half of all twenty nine (29) universities in Jordan offer pharmacy degrees. As illustrated in Figure 5.1 below, out of a total of fifteen (15) pharmacy schools in the country, fourteen (14) are accredited by HEAC.

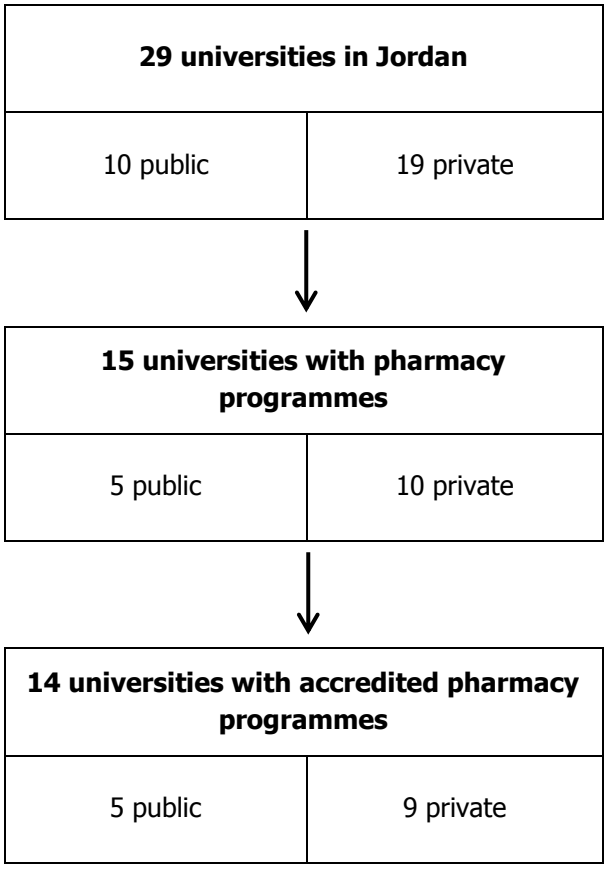


Figure 5.1 Jordanian universities offering pharmacy programmes.

Jordan's first school of pharmacy was established in 1979, as part of the Faculty of Medical Sciences at Yarmouk University (Table 5.1). Since 1986, the school has been affiliated with the Jordan University of Science and Technology (JUST). Soon after, in 1980, the country's second pharmacy school opened at the University of Jordan (UJ). In 1991, the era of private HE provision began, leading to a swift surge in the number of schools. A further notable sharp increase took place after 2010, with six new schools opening in the 2010-2013 period alone, including three new public schools. More than three decades separate the establishment of UJ's Faculty of Pharmacy in 1980, and the Hashemite University's Faculty of Pharmaceutical Sciences in 2013.

As of May 2016, Jordan has a total of five (5) public pharmacy schools. In terms of ownership, public universities are owned by the government, and are primarily public-funded. They also all fall within the administrative control of the Ministry of Higher Education and Scientific Research (MoHE). For their part, private schools comprise those institutions that fail to meet these criteria and are thus under private or independent administrative control. Nine (9) schools, accounting for two-thirds of all pharmacy schools, are identified as private. Most universities classed as 'privately owned' are for-profit institutions, with the exception of the American University of Madaba (AUM), a not-for-profit private university recently established by the Latin Patriarch in Jerusalem. As such, AUM is the country's first non-profit university and the first USA-affiliated HE institution to open in Jordan. The university is accredited by the New Hampshire Higher Education Commission and has institutional degree granting authority from the New Hampshire Legislature and Governor.

University	Name of School or Faculty	Year of establishment	Type of ownership	Code*
Jordan University of Science and Technology	Faculty of Pharmacy	1979	Public	Pu_JUST
University of Jordan	Faculty of Pharmacy	1980	Public	Pu_UJ
Al-Ahliyya Amman University	Faculty of Pharmacy and Medical Sciences	1990	Private-for-profit	Pr_AAU
Applied Science University	Faculty of Pharmacy	1991	Private-for-profit	Pr_ASU
Al Isra University	Faculty of Pharmacy	1991	Private-for-profit	Pr_IU
University of Petra	Faculty of Pharmacy and Medical Sciences	1991	Private-for-profit	Pr_PU1
Philadelphia University	Faculty of Pharmacy	1991	Private-for-profit	Pr_PU2
Al-Zaytoonah University	Faculty of Pharmacy	1993	Private-for-profit	Pr_ZU1
Zarqa University	Faculty of Pharmacy	2010	Private-for-profit	Pr_ZU2
American University of Madaba	Faculty of Health Sciences	2011	Private-not-for-profit	Pr_AUM
Hashemite University	Faculty of Pharmaceutical Sciences	2013	Public	Pu_HU
Middle East University	Faculty of Pharmacy	2013	Private-for-profit	Pr_MEU
Mutah University	College of Pharmaceutical Sciences	2013	Public	Pu_MU
Yarmouk University	Faculty of Pharmacy	2013	Public	Pu_YU

Table 5.1 Key facts on Pharmacy Schools in Jordan.
*Code column lists school shorthand names used throughout the chapter's data representations.

5.4.2 Academic Staff

In the 2014/2015 academic year, there were approximately 358 pharmacy academic staff members in Jordan. Table 5.2 below shows the distribution, by academic rank, of staff at all 14 pharmacy schools. In decreasing levels of seniority, the ranks are: Full Professor, Associate Professor, Assistant Professor, Instructor and, finally, Lecturer. Assistant Professors make up the highest proportion of academic staff (42.7%), followed by Full and Associate Professors (equally represented at 32.8% each), lecturers (19.8%) and instructors (7.7%). The average number of staff per school is 25.6. JU and JUST enjoy the highest staffing levels (with 64 academic staff members each), while the newest schools generally have the lowest, with Mutah University employing a mere 3 academic staff members in 2014/2015. About 40.8% of all staff members are concentrated within the five public universities.

In terms of gender distribution, females make up about half (51.1%) of all staff members (n=183). Closer examination shows that the proportion of female staff decreases as the academic rank increases. As such, while women make up 90.1% of lecturers and 85.7% of instructors, they only account for 45.1% of Assistant Professors, 36.7% of Associate Professors and 26.7% of Full Professors .

According to aggregated data from the MoHE, 87.7% of academic staff in all pharmacy schools are Jordanian nationals. The majority of non-Jordanian staff are nationals of other Arab countries, and make up 10.7% of the total. The remaining 1.5% of staff are foreign non-Arab nationals. Close to three quarters of all academic staff (70.8%) are PhD holders, of whom 62.5% are male.

Investments in staff education, principally in the form of PhD scholarship programmes, are common. Complete data from eight schools shows that, on average, six graduates per school were undertaking PhD degrees at overseas universities in 2014/2015. In exchange for having their PhD studies paid for by their university, they are expected to return to teach as staff members. The scholarship agreement usually stipulates a commitment to a minimum employment period of 2-3 working years for every year of the PhD course.

School / Academic rank		Pu - JU	Pu - JUST	Pr - AAU	Pr - ASU	Pr - IU	Pr - PU1	Pr - PU2	Pr - ZU1	Pr - ZU2	Pr - AUM	Pu - HU	Pr - MEU	Pu - MU	Pu - YU	**TOTAL**
Full professor	**Total**	23	10	3	1	5	6	4	2	3	0	0	3	0	0	**60**
	Female	9	1	1	1	1	0	1	0	2	0	0	0	0	0	**16**
Associate professor	**Total**	13	14	4	4	2	10	3	5	1	1	1	1	0	1	**60**
	Female	7	4	3	1	0	3	1	2	0	0	1	0	0	0	**22**
Assistant professor	**Total**	19	26	11	18	20	8	8	22	9	4	0	1	2	5	**153**
	Female	11	16	2	9	6	5	3	11	6	0	0	0	0	0	**69**
Instructor	**Total**	6	0	0	3	0	0	0	3	2	0	0	0	0	0	**14**
	Female	6	0	0	3	0	0	0	1	2	0	0	0	0	0	**12**
Lecturer	**Total**	3	14	8	3	8	7	7	2	7	1	4	2	1	4	**71**
	Female	3	13	6	3	7	7	7	2	6	1	3	2	1	3	**64**
TOTAL	**Total**	**64**	**64**	**26**	**29**	**35**	**31**	**22**	**34**	**22**	**6**	**5**	**7**	**3**	**10**	**358**
	Female	**36**	**34**	**12**	**17**	**14**	**15**	**12**	**16**	**16**	**1**	**4**	**2**	**1**	**3**	**183**

Table 5.2 Distribution of pharmacy academic staff by university and academic rank.

5.4.3 Academic Programmes

5.4.3.1 Undergraduate Degrees

UG pharmacy degrees are classified as Bachelor of Science, and include a 5-year Bachelor of Pharmacy (BPharm) and a 6-year Doctor of Pharmacy (PharmD) programmes. Table 5.3 below summarises the various types of pharmacy degrees, listed from the oldest to the newest, that are currently offered by the schools. The credit hours required to complete the BPharm course range between 160 (minimum) to 165. The minimum duration of the programme is 4 years, with the majority of students graduating after five (5) years.

The BPharm programmes can be either (1) BPharm (regular) or (2) BPharm, with two specialised tracks. The BPharm is offered by 11 out of the 14 schools in Jordan, and is considered the main national programme. Table 5.3 clearly shows that the specialised track is a new trend, offered by three new schools: the Hashemite University (HU), Mutah University (MU) and Yarmouk University (YU). The two tracks are the BPharm Industrial Pharmacy and the BPharm Pharmacy Management/Pharmaceutical Business. Introduced in 2000, the PharmD is a six-year course requiring the completion of a minimum of 210 credit hours, and is taught at two public universities, JUST and UJ.

All programmes appear to be 'knowledge-based' as opposed to being 'competency- or outcome-based' and follow the curricula requirements set by the accreditation body, HEAC. The national core curricular requirements for the BPharm and PharmD are listed in Tables 5.4 and 5.5 respectively. Excluding University Requirements and General Education, more than 80% of core BPharm courses are science-based (pharmaceutical sciences and chemistry, pharmaceutics and advanced pharmaceutics and the medical sciences). Clinical pharmacy is allocated a minor proportion as part of the Medical Sciences category with no specifications on minimum credit hours. There are no requirements for other pharmacy practice-based courses. Up to 75% of the course is dedicated to theoretical learning, and a practical laboratory component comprises no less than 15%.

Pre-registration pharmacists are required to complete 1440 hours of training (equivalent to 36 weeks, based on a 40-hour week) before obtaining their practicing license. The training is unstructured and is primarily arranged and completed by the student on his/her own time. Some schools (n=5) consider a tranche of these training hours (ranging between as little as 3 hours and up to 900 hours) as structured practical experience required for graduation.

All twelve respondent deans reported that their programmes were delivered in the English language, with the exception of modules relating to local pharmacy practice laws, which are instructed in Arabic (the language of the relevant legal codes).

5.4.3.2 Postgraduate Degrees

The University of Jordan is the only HE institution in the country offering a pharmacy PhD programme, while six schools provide Masters of Science (M.Sc.) programmes; the most common of which being the M.Sc. in Pharmaceutical Sciences.

Professional Diplomas targeted at practitioners are also available, such as three part-time Professional Diplomas recently introduced by AAU, in (1) Retail Pharmacy Management, (2) Sales and Marketing and (3) Good Manufacturing Practice "GMP". Professional training diplomas hours range between 120-150 hours and are a combination of on-campus lectures and training hours (arranged with a local pharmacy chain).

5.4.3.3 Other Degrees

Some of the Pharmacy schools also offer non-pharmaceutical health science UG degrees. For instance, Al-Ahliyya Amman University offers a Bachelor of Medical Analysis and a Bachelor of Audiology and Speech Pathology, while the Faculty of Pharmacy and Medical Sciences at the University of Petra offers a 4-year Bachelor of Nutrition.

Degree / School	UNDERGRADUATE DEGREES				POSTGRADUATE DEGREES		
	BPharm	PharmD	Industrial Pharmacy B.Sc.	Pharmacy Management B.Sc.	PhD	M.Sc.	Professional Diploma
Pu - JUST	**X**	**X**				**X**	
Pu - JU	**X**	**X**			**X**	**X**	
Pr - AAU	**X**						**X**
Pr - ASU	**X**					**X**	
Pr - IU	**X**					**X**	
Pr - PU1	**X**					**X**	
Pr - PU2	**X**						
Pr - ZU1	**X**					**X**	
Pr - ZU2	**X**						
Pr - AUM	**X**						
Pu - HU			**X**	**X**			
Pr - MEU	**X**						
Pu - MU			**X**	**X**			
Pu - YU			**X**	**X**			

Table 5.3 UG and PG pharmacy degree provision by Jordanian universities

Curricular Area	*Content Description*	*Minimum credit requirements* (% of course load)*
University Requirements	Compulsory courses (e.g. Arabic and English language skills) and elective courses (e.g. project management and computer skills).	27 (17%)
General Education	Chemistry; biology; mathematics; physics.	12 (8%)
Pharmaceutical Sciences and Chemistry	Physical pharmacy; organic chemistry; analytical chemistry; medicinal chemistry; instrumental analysis; biochemistry-clinical biochemistry; chemistry of natural products; drug design.	30 (19%)
Pharmaceutics	Pharmaceutics; pharmaceutical technology; cosmetics; biopharmaceutics; pharmacokinetics; pharmacoeconomics.	22 (14%)
Medical Sciences	Anatomy and histology; physiology and pharmacology; pathophysiology; applied & pharmaceutical microbiology; toxicology; immunology; clinical pharmacy.	34 (21%)
Advanced pharmaceutics	Pharmaceutical technology; pharmaceutical bio-technology; pharmaceutical marketing; homeopathic remedies.	12 (8%)
Other	Faculty requirements of choice.	9 (6%)
Practical Modules	Practical modules should make up no less than 15% of the core modules. *Exact credit hours are not specified.	15%*
	Total	**160**

Table 5.4 BPharm curricular structure and minimum requirements for accreditation.
*One credit hour is equivalent to one contact hour per week.

Curricular Area	Content Description	*Minimum credit requirements* (% of course load)*
University Requirements	Compulsory courses (e.g. Arabic and English language skills) and elective courses (e.g. project management and computer skills).	27 (13%)
General Education	Chemistry; biology; mathematics; physics.	12 (6%)
Medical Sciences	Anatomy and histology; physiology; pathophysiology; toxicology; immunology; microbiology; clinical biochemistry.	16 (8%)
Pharmaceutical Sciences	Medicinal chemistry; pharmacology; phytotherapy and alternative therapy; pharmaceutical organic chemistry; pharmaceutical analytical chemistry; instrumental analysis; phytochemistry; pharmaceutics; pharmaceutical technology; pharmacokinetics; pharmacogentics.	45 (21%)
Clinical Pharmaceutical Sciences and Pharmacy Practice	Pharmacotherapy; clinical pharmacokinetics; clinical nutrition; clinical case studies community pharmacy; drug information resources; pharmaceutical care practice; communication skills in pharmacy practice; pharmacy management and marketing biostatistics ;OTC drugs; pharmacoeconomics ; clinical research methods; evidence based pharmacotherapy ; pharmacy ethics and legislations.	38 (18%)
Clinical Pharmacy Training	The training programme must contain at least 9 training rounds, with 7 mandatory areas that include internal medicine, paediatrics, outpatient clinics, hospital pharmacy and critical; intensive care.	30 (14%)
Other	Faculty requirements of choice.	9 (4%)
Practical Modules	Practical modules should make up no less than 10% of the core modules. *Exact credit hours are not specified.	10%*
	Total	**210**

Table 5.5 PharmD curricular structure and minimum requirements for accreditation.

5.4.4 Admissions and Financing

5.4.4.1 Admission Requirements

All pharmacy schools share the same admission requirements for acceptance into the main national programme, namely that the applicant hold a Scientific Stream General Secondary Certificate (Tawjihi) - or equivalent - with a minimum score of 80%, though one school reported that it accepted a lower score (70%) from non-Jordanian applicants. None of the schools currently require any entry examinations nor do they interview any prospective students ahead of enrolment.

The Pharmacy Assistant Bridging Programme offers the opportunity of enrolling into the BPharm programme to anyone who has completed a two-year (72 credit hours) Pharmacy Assistant Diploma at an accredited Community College. Unlike the traditional university-level study route, the Bridging Programme sets no minimum high-school grades as part of its admission requirements, though it does stipulate that holders of the Community College Certificates achieve no less than a score of 70%on the 'Shamel Exam', the annual comprehensive final exam for community college students.

5.4.4.2 Tuition Fees

There are two types of admission systems in operation at public universities: 'regular' and 'parallel'. The regular programme is managed by the MoHE and involves allocating Secondary School leavers with university programme 'seats' depending on their General Secondary Certificate scores. The parallel programme, meanwhile, allows students to directly apply for public university courses. Admission into the parallel programme is competitive and depends both on the applicant's academic performance and the availability of seats. University fees are highly subsidised for applicants to the regular programme(compared to the equivalent parallel programme fees). Private universities operate a single direct admission system and the cost of education is the same for all students, whether home-based or international. Table 5.6 below lists the cost of the main national pharmacy programme, the BPharm, across the private and public universities. The average fee per credit hour at private universities is 116 Jordanian Dinars (JD), which is equivalent to £112 approximately. Based on a minimum of 160 credit hours, the average cost for the BPharm is 18,560 JD (£17,870). Meanwhile, the average cost of the BPharm at public universities ranges between 7040 JDs (£6777) and 22,880 JDs (£22,024), depending on the enrolment type and admission programme. In addition to the data presented in Table 5.6, one public university offers a special subsidised rate (100 JDs per credit hour) for Palestinian applicants only.

	Student Type		**Tuition Fees (in JD/Credit Hour)**	
			Range	**Average**
Public	Domestic Students	Regular Programme	21-60	44
		Parallel Programme	90-100	96
	Foreign Students		120-159	143
Private	All Students		95-130	116

Table 5.6 Tuition Fees for Main Pharmacy Programme (BPharm).

5.4.5 Students and Graduates

5.4.5.1 Student Admissions

Students accepted into pharmacy schools accounted for 3.9% of all students admitted to Jordanian universities for undergraduate (UG) studies in the 2014/2015 academic session. A total of 2,277 students were admitted to entry-level pharmacy programmes, 75.1% of whom enrolled at public universities. Table 5.7 below shows the distribution of admitted students by entry-level degree. More than 65% of all new students were admitted to the main national programme, the B.Sc. of Pharmacy, while close to 12% were admitted to the new specialised streams; Industrial Pharmacy and Pharmacy Management. About 22% (510 students) were admitted into the two PharmD programmes at JUST and UJ.

The 2014-2015 cohort of students enrolled in pharmacy courses is 76% female. The proportion of female students was especially high for the PharmD (84.7%), Industrial Pharmacy (82.2%), and Pharmacy Management (84.8%) programmes, compared to that for the regular BPharm course (71.6%). As to postgraduate studies, 122 students were admitted across the country into Masters degrees in pharmacy, 76.2% of whom enrolled at public universities.

	Frequency	
Entry-Level Degree	**Total (%)**	**Female (%)**
B.Sc. Pharmacy	1495 (65.7)	1070 (71.6)
B.Sc. Industrial Pharmacy	107 (4.7)	88 (82.2)
B.Sc. Pharmacy Management	165 (7.2)	140 (84.8)
PharmD	510 (22.4)	432 (84.7)
Total	**2277 (100.0)**	**1730 (76)**

Table 5.7 Pharmacy school admissions for the 2014-2015 academic year.

5.4.5.2 Student Enrolment Figures

As of the 2014/2015 academic year, 12,280 students were enrolled onto UG pharmacy degrees across the country, accounting for 4.6% of the total number of UG students (267,489) enrolled in Jordanian HE institutions. The number of enrolled students was evenly distributed between public (48.2%) and private (51.8%) universities. While the average number of students per pharmacy school is 877.1, the average number of students per school is higher in the five public institutions (1183.6) compared to that at the nine private ones (706.9).

Table 5.8 below lists student enrolment figures across the various pharmacy programmes, and shows that about 80% of all students are enrolled onto the regular Bachelor degree. In terms of gender distribution, the results closely mirror the patterns of student enrolment described above, with the country's current pharmacy student cohort being mostly female (71.1%). The specialised streams enjoy the highest proportion of female students. The data also shows that more than a third (36.2%) of all enrolled students are non-Jordanian nationals.

	Frequency	
Entry-Level Degree	**Total (%)**	**Female (%)**
B.Sc. Pharmacy	9626 (78.4)	6504 (67.6)
B.Sc. Industrial Pharmacy	191 (1.6)	165 (86.4)
B.Sc. Pharmacy Management	262 (2.1)	234 (89.3)
PharmD	2201 (17.9)	1827 (83)
Total	**12,280 (100.0)**	**8730 (71.1)**

Table 5.8 Student enrolment figures at pharmacy schools for the 2014-2015 academic year.

5.4.5.3 Graduation Figures

A total of 1,604 students graduated from UG pharmacy courses at the end of the 2014/2015 academic session, most (85.2%) of whom graduated with a Bachelor's degree, while 237 students approximately were PharmD graduates. UJ and JUST alone accounted for 42% of the country's pharmacy graduates. Meanwhile, no students have yet graduated from any of the five most recent schools (established post-2011), with the first batches expected to graduate between 2016 and 2018, depending on the institution.

5.4.6 Accreditation and Quality Assurance

All pharmacy schools rely on national accreditation by the Higher Education Accreditation Commission (HEAC). Their aim is to the performance of HE institutions and to strengthen their competitiveness at the local, regional and global levels. The main goal of the accreditation system is to ensure the application of Jordanian regulations as well as compliance with international accreditation and quality assurance (QA) standards, as is the case in developed countries. To that end, all HE pharmacy schools must be accredited with HEAC upon being established. Private institutions must renew they accreditation every 1-2 years, while public ones are exempted from this requirement. As of May 2016, none of the schools had any kind of regional or international accreditation, though a dean at a public university reported that his school is currently seeking a review and accreditation by the U.S. Accreditation Council for Pharmacy Education.

There are two types of quality assurance (QA) systems: internal and external. All schools have internal QA Committees which constantly revise and review their curricula and school policies. In terms of external QA, the HEAC recently introduced Manuals of Quality Assurance, which are targeted at the different specialisations across HE in Jordan. The Manual of Quality Assurance Standards for the Pharmacy Programme helps schools to undertake the self-evaluation process necessary to obtain the HEAC Certificate of QA. The manual lists eight standards relating to the areas of Strategic Planning; Governance; Academic Programmes; Scientific Research, Scholarships and Innovation; Financial, Material and Human Resources; Student Services; Community Service and External Affairs; and Quality Assurance.

5.5 Discussion

5.5.1 Key Findings

The survey data collected and examined in this study has helped establish a number of key findings. The timeline of the HE pharmacy sector's development is marked by three principal milestones: (1) 1979-1980: the country's first (public) pharmacy schools were established; (2) 1990-1993: six further schools were created; (3) 2010-2013: six more schools opened.

As of May 2016, there are 14 accredited pharmacy schools in Jordan; five of which are public, while nine are private. Staffing levels have been shown to vary significantly across schools. While the female-male distribution of the overall academic workforce is balanced, gender imbalances remain pronounced in senior staff categories. Most members of the academic workforce are male, hold a PhD, and are Jordanian nationals.

The BPharm is the country's principal pharmacy programme, and is offered by all of the country's 14 schools. Moreover, three new schools offer a choice between two specialised BPharm tracks: Industrial Management and Pharmacy Management. Two public universities offer a PharmD course, while six schools offer Masters programmes. Only one school offers a PhD programme, while postgraduate professional diplomas are offered by a single institution also.

All schools require the same admission requirements for the BPharm course, namely a High School-leaving certificate (Scientific stream) with a minimum score of 80%. Private schools have a direct admissions system while public ones offer two types: regular and parallel programmes. Tuition costs for the BPharm course vary according to school type and admission systems.

There were 2,277 new enrolees, 12,280 actively-enrolled students, and 1,604 students graduating at the end of the 2014/2015 academic session. Most students opted for the BPharm as their degree course and public university sector as their educational provider. About 20% of

those admitted chose to enrol into the PharmD programme. All three segments (new enrolees, current students, and recent graduates) were female-dominated.

All schools must be accredited by the governmental agency, HEAC, though only private universities are required to undergo periodical accreditation renewal. The Quality Assurance system includes internal (i.e. school-formed QA committees) and external (i.e. HEAC QA Certificate) mechanisms.

5.5.2 Emerging Trends

Pharmacy education in Jordan is undergoing a major transitional phase, due to a number of factors, such as the rapid expansion in the number of pharmacy schools, with six new schools being launched since 2010. Three of these schools have presented a new route to pre-service pharmacy education. Since 2013, new UG programmes are on offer for prospective students: the specialised track BPharm, which has expanded the traditional BPharm to make it more adapted to sector-specific practice areas (e.g. industry and retail management).

However, there is currently no national strategy for pharmacy education that provides a political or economic rationale for the introduction of these new paths – just as there was no formal rationale underpinning the introduction of the PharmD course. One could speculate that these programmes have been introduced in response to market needs, which would not be surprising considering the size and prominence of the pharmaceutical industry, as well as the ever-increasing prominence of community/retail pharmacies among pharmaceutical facilities.

The recent expansion in pharmacy schools, and the addition of new degree programmes, both offer wider opportunities for those wishing to pursue pharmacy as a career. Nevertheless, such rapid changes warrant ongoing monitoring and evaluation, both at present and in the months and years ahead. The introduction of new specialised tracks could be seen as a positive step in the drive towards needs-based education, but caution should be exercised to ensure leading stakeholders do not overlook the primary purpose of the main national programme. Indeed, the BPharm should, in addition to these specialised tracks, be able to produce well-equipped pharmacists who are prepared to practice in different settings.

At this juncture, it is important to be reminded of some of the negative drawbacks, as reported in Study I, of introducing PharmD programmes. Conversely, the new tracks – unlike the PharmD – have not been the result of an uncritical adoption of a Western standard, but rather a response aimed at addressing specific market needs of the country. The numbers of graduates are expected increase even more from 2016 onwards as the first batches of graduates from post-2011 schools begin to enter the market. It is important to consider the implications this will have on the workforce's supply and demand dynamics. We learned from Study II that there is a gap in workforce planning strategies, and the projected growth in the supply of pharmacists presents an additional reason for an urgent move towards filling that gap.

Moreover, the study data shows the absence of competency-based standards in Jordan, results that echo the wider regional trends. For instance, a 2008 review by Kheir et al. of pharmacy education in 13 Middle Eastern countries found that most pharmacy programmes in the region follow traditional knowledge-based curricula. A more recent scoping review, by Bajis et al. (2016), found that there is no strong evidence of competency-based teaching and learning in the region.

In terms of practical learning, and according to the national core curriculum for the BPharm degree, the minimum proportion of time to be spent on laboratory-based (practical) learning should be at least 15% of the core curriculum. This is considered low compared to the global average of 36% as reported in the 2013 FIPEd Global Education Report. However, this is merely the set minimum and may thus not reflect the true proportion observed in schools. This can be further examined through a comparative analysis of different syllabi.

The survey data also offers insights into the supply-side characteristics of the workforce. Jordan has a high supply rate of pharmacists compared to the regional average. In 2014/2015, Jordan produced 2.4 pharmacists per 10,000 population (based on a 2014 World Bank population estimate of 6.607 million), more than five times the 2013 Eastern Mediterranean regional average of 0.46 pharmacists per 10,000 population (International Pharmaceutical Federation, 2013). The female-dominated character of the Jordanian pharmacy undergraduate population is

consistent with global trends (International Pharmaceutical Federation, 2013). The results are also consistent with the previous Study II which also reported a majority-female workforce.

5.5.3 Study Strengths and Limitations

As indicated at the outset, this is the first exhaustive, systemic, empirical examination of the current state of pharmacy education in Jordan. No study of the same scope or scale had been attempted with regards to the Jordanian context before, and the few studies that have touched on the Jordanian pharmacy sector have been either un-systemic or narrow in their scope. Moreover, the study is the first of its kind to deploy a clear, robust, and rigorous methodological approach in its data collection and analysis process. As such, it will hopefully steer the debate "from commentary to empirical" conclusions, and possibly help offer a solid, evidence-based platform for future planning and policy-making in this area (Babar et al., 2013).

Of course, it must be noted that survey-based research, by its very definition, presents a number of important limitations. For a start, studies featuring surveys must rely for the validity of their findings on that of the (inherently fallible) self-reporting of the participants. This is particularly the case when it comes to answers featuring subjective and/or qualitative assessments. Moreover, the collected data does not enjoy some of the usual checks, such as peer-review validation, offered by other methods. Because the target population size (n=14) is considered small (Krejcie and Morgan, 1970), sampling part of it (n=12) "may not provide accurate estimates of the whole" (Draugalis and Plaza, 2009). On the other hand, the data collection method was unorthodox for survey research. Most questionnaire sections were completed using publicly available information (i.e. websites) and official data (i.e. HEAC, MoHE). As such the non-response rate is difficult to discern. While serious efforts were made to ensure all data extracted from websites were up-to-date, the accuracy of some of the official figures from MoHE and HEAC was not always verifiable.

5.6 Conclusion

For the past decade, pharmacy education in Jordan has been undergoing a period of transition and upheaval. As the sector expands rapidly, with more universities, courses and students than ever, the challenges of ensuring it continues to respond to the needs of the population are more pressing and urgent than ever. So far, market-driven forces have been the primary factors shaping the evolution of the pharmacy sector in Jordan, and have driven HE institutions to devise new ways of preparing better-equipped pharmacists. However, the impact of introducing these new specialised track son the quality of graduate pharmacists, particularly their ability to deal with the needs presented by a fast-moving local context, are yet to be truly understood. The present study has highlighted the absence of a national strategy steering the development and planning of pharmacy education, leading to haphazard proliferation of providers and courses. Unless this is addressed, and educational sector strategic planning is introduced at the national level, the disconnect between the country's pharmacy education provision and the needs of the country's healthcare sector are likely to grow.

Chapter 6 STUDY IV Education: Graduates' Preparedness for Practice



6.1 Introduction

6.1.1 Pharmacy Education: From Global Lessons To Local Solutions?

The issue of 'needs-based education' has markedly grown in prominence in recent years. This has been partly spurred on by the increasing globalisation of higher education (HE) in the 21st century, which may have diverted attention, and resources, from more urgent local needs (Lauder et al., 2006). The drive towards globalisation can be seen in the accelerating endeavours by members of the professional pharmacy community to become a part of the 'global village' of pharmacy practice (Anderson et al., 2012).

Of course, attending to local needs ought not to preclude the quest for a regional – or, indeed, global– standard. However, securing adherence to global standards whilst attending to local needs is a complicated and delicate balancing act; one which has engaged the pharmacy research community (Anderson et al., 2008b, Anderson et al., 2010, Alsharif, 2012) as well as the HE sector in general (Chatterton and Goddard, 2000), for years. In order to better understand the notion of 'needs' in this context, it is necessary to trace it back to the concept of 'quality' in HE.

6.1.2 Quality As Fitness For Purpose

According to Harvey, Burrows and Green (1992), there are a number of approaches to the concept of 'quality' in HE. These include framing quality in terms of excellence, perfection (or

'zero errors'), enhancement, transformation, minimum standards, value for money, or 'fitness for purpose' (Fry et al., 2003, Harvey and Knight, 1996). The 'fitness for purpose' notion has been widely adopted by most HE policymakers and analysts, and involves defining quality as the extent to which services or products meet their specified purpose(s) (Houston, 2008). Accordingly, in order to adopt the 'fitness for purpose' paradigm, it is necessary for the relevant service or product specifications to be clearly established. Taking into consideration how purposes may change over time, the 'fitness for purpose' model is developmental in nature; one which recognises that constant revision and re-evaluation of the specifications are both necessary to keep up with new and evolving contexts (Burrows et al., 1992).

In the field of HE, the concept of 'purpose' may reference numerous aspects and dimensions, such as stakeholders/customers, needs (e.g. of employers or society), the learning outcomes or aims of an educational programme, an institution's mission statement, meeting graduate numbers targets, or offering courses that provide the correct balance of knowledge and skills (Fry et al., 2003). Evidently, the question of how 'purpose' ought to be defined, and by whom, is of critical import and can sometimes be problematic considering "the complexity of the interlinked environments and expectations in which universities operate" (Houston, 2008).

6.1.3 The Knowledge-Based Economy, Globalisation, and Purpose

Although many believe that economics supersedes education when it comes to development, the emergence of knowledge-based economies has reframed education into a key human and social - and, thus, economic - yardstick, securing its prominence in global policy-making initiatives, such as the MDGs (McGrath, 2010). This has resulted in increased pressure on HE institutions to equip their students with the right skills to fulfil their role as 'human capital' (to adopt knowledge economy theory terminology) (Lauder et al., 2012). As a result, the regional role of HE institutions has increasingly revolved around attending to the vocational or professional educational demands of the labour market, leading to more concerted efforts to ensure HE programmes are closely matched with the local, regional and national skills needed. While workforce quality has been identified as a crucial pre-requisite for economic success (Crouch et al., 1999), it has been difficult for HE institutions to organise suitable provision

considering the lack of lead agencies needed to help determine regional skills needs (Chatterton and Goddard, 2000). This is epitomised by the Jordanian example.

In light of the country's lack of natural resources and high unemployment rates, the Jordanian HE sector has very rapidly become a key player in public policy discourse, notably involved in official calls for the creation and consolidation of a 'knowledge economy' through educational channels. Such a 'knowledge economy'-centred approach – and the corollary investment in human capital it necessitates – has become a topic of supreme importance, as evidenced by numerous reform-minded projects (Powell and Snellman, 2004). These efforts have been mostly led by international organisations, local ministries and research groups over the past decade, with the aim of developing an environment where a 'knowledge economy' would thrive. Such initiatives include the Higher Education Development Project (2000-2007) and the National Agenda for Higher Education (2007-2012) headed by the Minister for Higher Education. They also comprise the Higher Education for Knowledge Economy Programme, HERfKE (2009-2015) and the collaboration between the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and Change Agent for Arab Development and Education Reform (CADER) which resulted in the Post-2015 Agenda prominently featuring the theme of "relevance of Jordanian curricula for 21st century and knowledge economy skills" (2013). Indeed, this view has been pointed out by the HERfKE, indicating that Jordan's HE sector has evolved "but not fast enough to meet the needs of knowledge-based economy", and that this may be partly ascribed to HE institutions lacking the "necessary quality of instruction, independent leadership and progressive curricula" that would otherwise prepare students to fulfil the needs of potential employers (World Bank, 2009).

In addition to the knowledge-based economy, globalisation has also had its effect on quality as 'fitness for purpose'. According to Serf (2008), a 'fit for purpose' education is one in which learners are prepared not only to survive in an increasingly globalised society, but also be able to contribute to it. Other transformative effects of globalisation in HE have been recently highlighted by Gibney (2013), who explores a few emerging trends; notably the boom in undergraduate education, the growing importance of private tuition income, and

internationalisation (e.g. foreign campuses). This increased emphasis on the development of professional skills (Dall'Alba and Sandberg, 2006) is consistent with the curricular transformations in recent HE history. Educational progress over the last century can be framed around three reform generations. The first (traced to the start of the 20th century) revolved around science-based curricula. The second (mid-century) proposed problem-based teaching; while the third, a Systems-based one, is under pressure to improve performance (e.g. of health systems) through adapting core professional competencies to specified and localised contexts whilst maintaining adherence to global knowledge standards (Frenk et al., 2010).

These new competency-based learning models have led to some ideological tensions in HE institutions, between those calling for scientific learning to be independent of the production sector, and advocates of the adaptation by universities to the socio-economic developments of labour markets. Either way, one cannot deny the growing prevalence of the 'skills' lexicon in educational research and practice.

6.1.4 The Skills Lexicon

'Skills', 'attributes', 'attitudes' , 'competencies', 'qualities', 'values', 'abilities' and 'capabilities' are all terms that have been frequently defined and redefined across the literature (Bruno, 2011, Harvey and Knight, 1996, Arthur and Rousseau, 1996). There is little advantage to exploring all the connotations attached to these terms, and so, for practical reasons, rather than attempting to identify the most accurate definition –a formidable task in itself- FIP definitions will be adopted for the purposes of this project.

A 'capability' is a set of competencies. For a health professional to be capable, he or she must first possess the relevant set of competencies that constitute the capability in question. The FIP defines competencies as the set of "knowledge, skills, attitudes and behaviours that an individual develops through education, training, development and experience" (2012b). For the purposes of the present study, this general definition - which doesn't adopt a rigid distinction between knowledge, skills and attitudes - will be adopted. The terms 'skills' and 'competencies', for instance, will be used interchangeably. Similarly, a 'need' can also refer to a 'competency' or

any of its constituencies, namely knowledge, skills and/or attitudes. However, the distinction between 'competency' and 'need' lies in the extent of pre-determination involved: For example, 'competency' will indicate a pre-determined skill whilst 'need' would imply an undetermined skill (i.e. one yet to be identified). Hence, 'competency assessment' refers to assessing the presence (or absence) of a pre-determined competency (e.g. to what extent is 'leadership' taught in a certain pharmacy curriculum?) and 'needs analysis' refers to identifying the need, or lack thereof, of a competency (e.g. what is needed of the pharmacist in a certain context?).

6.1.5 Competency-Based Education In Pharmacy

Within the pharmacy discipline, minimum competencies do not differ vastly across countries, and often share common baselines (Anderson et al., 2012). As such, Burke et al. (2008) claim that defining and promoting pharmacy's core competencies will help in addressing the issue of the profession's image. The FIP Education initiatives (FIPEd) clearly acknowledge the common scientific basis shared by pharmacy education providers across the globe, similar to medical education provision (Lindgren and Gordon, 2012). Competency-based training has led some to believe in the importance not only of defining competencies during the professional education (i.e. undergraduate) stage but also during 'pre-pharmacy or pre-professional education'. The latter, they claim, has a great impact on the readiness of the student for the main professional programmes in pharmacy schools which, in turn, will prepare him or her for professional practice (Jungnickel et al., 2009).

For decades, developed countries have been global leaders in competency-based pharmacy curricula, as reflected in their tertiary healthcare environments (including patient-oriented services, health system planning, and quality assurance). However, whenever such systems are introduced in a developing country (i.e. one with much more limited resources), it becomes evident that reform policies, even when officially-endorsed, often fail to reach the implementation stage due to the lack of an informed direction (Anderson et al., 2012). With this in mind, and in an effort to develop the global pharmacy workforce, FIPEd has devised a set of competencies termed the 'Global Competency Framework' (GbCF); a constantly evolving project

intended to serve as an outcomes-based mapping tool for use in the early stages of learning and training (Bruno et al., 2010, Bruno, 2011).

6.1.6 The Global Competency Framework

The Global Competency Framework was developed by the International Pharmaceutical Federation's Education Initiative in 2011. The product of a very complex and multi-dimensional evidence-based research study, the GbCF (v1) contains a comprehensive set of core behavioural competencies that are considered to be generally applicable to the pharmacy workforce worldwide. A total of 100 behaviours and 20 competencies are categorised into four main domains: 1) Pharmaceutical Public Health, 2) Pharmaceutical Care, 3) Organisation and Management, and 4) Professional/Personal, as illustrated in Figure 6.1 below. The first version of the GbCF is provided in Appendix 28. The framework was created as a mapping tool to create country-specific needs. In addition, the Framework can be attached to an assessment grid and, with the aid of appropriate assessment resources, assist countries that do not have a competency framework but plan to develop one.

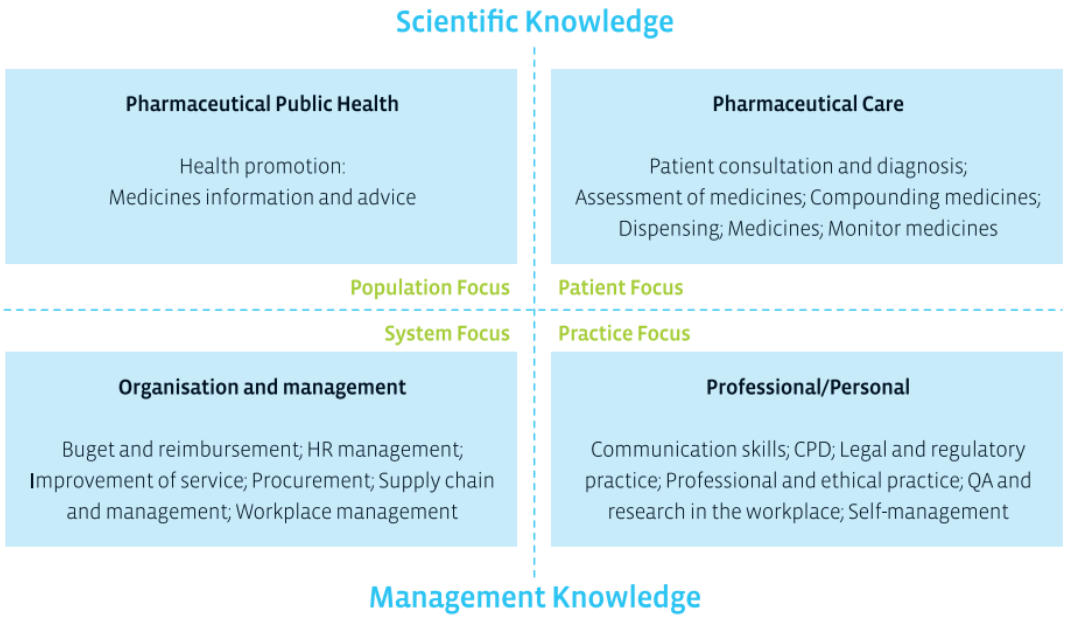


Figure 6.1 Global Competency Framework's (Version 1) Domains and Competencies.

The GbCF has been used in a number of national and regional projects. For instance, using the GbCF as a mapping tool, the Pharmaceutical Society of Ireland and Expert Panels in Serbia and Portugal have all worked on forming national-level competency frameworks. Other countries - such as Singapore, Australia and Croatia – have undertaken initiatives to link the GbCF with their practitioner frameworks. The GbCF has also been used in collaborations between the Pan-American Health Organization and other technical groups for the development of pharmacy services competencies. More recently, a study by Bajis et al. (2016) used the GbCF as a mapping tool in their scoping review, in which they reviewed the literature for evidence of competency-based pharmacy education in the Eastern Mediterranean Region. Articles that were accepted for inclusion were then categorised and assessed according to the GbCF's four domains.

6.2 Study Rationale

Identifying performance gaps is one of the most efficient ways of assessing fitness for practice. This study thus seeks to evaluate graduates' preparedness for practice (PFP)through identifying their skill and competency gaps. Semi-structured interviews with stakeholders and pharmacy professionals are used as a secondary data source. Using the GbCF as a coding framework, qualitative content analysis is performed on the transcripts to map the content against the Framework's behaviours. The results are used to gain exploratory insights into stakeholder perceptions of graduates' PFP, as well as to examine the use of the GbCF as a coding frame and lay the groundwork for further validation exercises.

6.3 Methods

6.3.1 Qualitative Content Analysis

Originally connected to the development of mass media (Kohlbacher, 2006), 'Content Analysis' refers to an approach that "uses the scientific process to identify messages relevant to a defined or evolving theoretical framework, recode the messages into a quantifiable form using explicit and objective processes, and analyse the messages to draw conclusions that further understanding of theory" (Holdford, 2008).

Content analysis is thus commonly divided into two types: qualitative and quantitative. In its inception as a research concept in the 1950s, content analysis was primarily a quantitative technique (Berelson, 1952). However, quantitative content analysis faced a number of critiques; especially with regards to its emphasis on quantification over interpretation, its limited flexibility in terms of analytical process, and the decontextualisation of the research process it often produces (Kohlbacher, 2006). Eventually, this led to the development of qualitative content analysis or QCA (Mostyn, 1985, Altheide, 1996, Schreier, 2012).

According to Bryman (2004), QCA is one of the most common approaches to the qualitative analysis of documents. The systemic nature of QCA arguably lends it a quantitative angle, since the resultant reduced data can be counted and analysed statistically. While QCA is used on all types of qualitative data; in health research, the method has been traditionally used to study media communications to audiences (Holdford, 2008).

Hsieh and Shannon (2005) present a number of approaches to content analysis, differing mostly in their choice of coding frame. For instance, in *conventional* content analysis, the coding frame is built around, and derived from, the data itself. In *directed* content analysis, researchers can, from the outset, use previous research findings or a predetermined frame or set of concepts/variables as a guiding tool for generating initial codes (Potter and Levine-Donnerstein, 1999). In other words, the variables or concepts of the pre-determined frame act as the initial coding categories, and researchers can begin coding immediately with these predetermined codes. When a directed approach is used, the pre-existing frame is usually

extended; and the QCA in this case additionally acts as a validation exercise. This study uses QCA as a 'text' analysis tool on secondary interview data, using a directed content analysis process in accordance with Schreier's (2012) step-by-step approach to QCA.

In her book, *Qualitative Content Analysis in Practice*, Margrit Schreier describes QCA as "a method for systemically describing the meaning of qualitative material. It is done by classifying material as instances of the categories of a coding frame". Figure 6.2 below summarises the basic steps involved in the process, from choosing the research question to the interpretation and presentation of the findings. Based on these steps, the following sections lay out the data analysis process employed in this study.

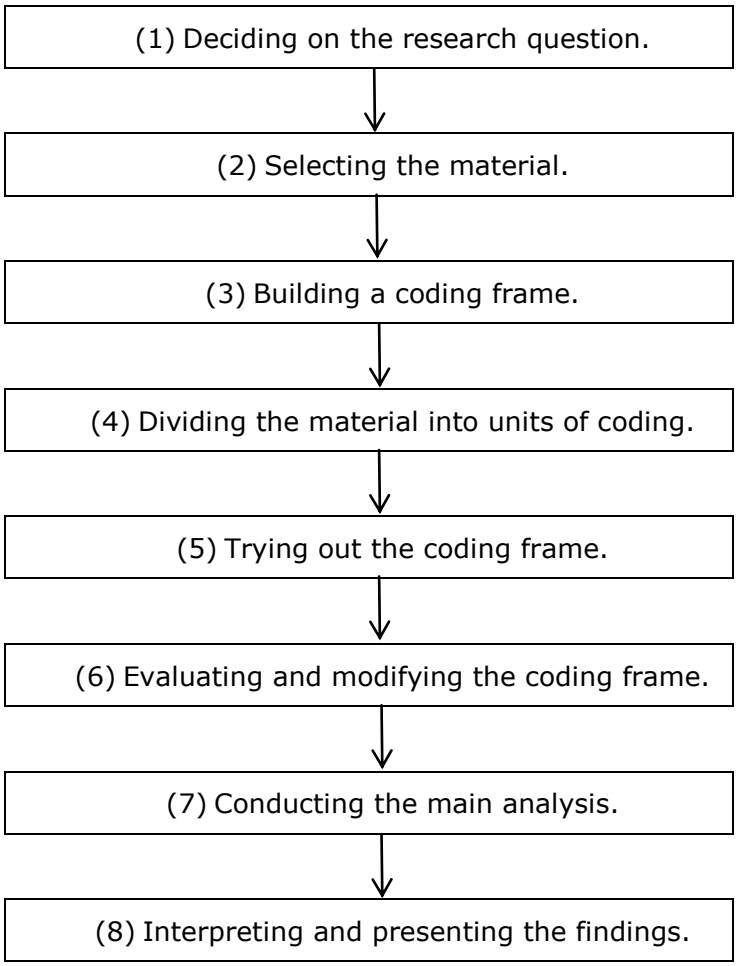


Figure 6.2 Steps in Qualitative Content Analysis process.

6.3.2 The QCA Process: A Step-By-Step Guide

(1) The research question: As mentioned earlier, this study aims to evaluate graduates' preparedness for practice by identifying competency gaps. This study therefore asks the following question: "What are the gaps in pharmacy graduates' skills and competencies?" This research question was included in the interview guide (Appendix 6) and, as such, the QCA is a secondary analysis of the transcripts.

(2) The material: The materials used for this study are the transcripts of the same 53 interviews conducted with multi-sector stakeholders and pharmacy professionals that were used in Study I. The process of collecting, collating, and translating of the interview transcripts is described in the Methods Section (3.3) of Study I (Chapter 3). All transcripts were entered onto NVivo in preparation for analysis.

(3) The coding frame: In accordance with the directed QCA approach, the GbCF was used as the pre-existing coding frame guiding the coding process from the outset. The GbCF's pre-determined 100 behaviours represented the variables used to generate the initial codes.

(4) The coding units: The following steps were taken to divide the transcripts into units of coding:

i. First, the transcripts were read and reread carefully. Textual references to the PFP theme were also highlighted, with the following thematic criteria used to establish relevance: (a) The participant is listing/describing perceived graduate skills gaps; (b) The participant is discussing the shortcomings of the curricula and education outcomes; (c) The participant is describing the ideal candidate or is listing aspired-to and needed skills.
ii. Once the relevant sections were highlighted, they were segmented into smaller coding units as follows; so that the first unit of coding in the first interview is referred to as 1.1, while the 15th unit of coding in the third interview is referred to as 3.15 and so on.
iii. A total of thirteen interviews contained no relevant codes, and were thus excluded from the study. The quasi-totality of participants in these interviews were unable to comment

on graduates' PFP because they had no or limited interactions with them. Of these participants, five (5) worked in governmental and nongovernmental agencies (i.e. MoH, HEAC, and UN). Pharmacy school deans formed another excluded group (n=6). It is interesting to note that when it comes to answering questions about graduates' PFP, deans tended to discuss the perceived successes of their own school programmes rather than point out graduates' skill gaps. In addition, transcripts of two practicing pharmacists (n=2) from the community and industry sector failed to meet any of the relevant criteria.

In total, forty interviews were included into this study. Table 6.1 below provides a comparative analysis, by sector, of the 53 interviewees and the 40 participants in the QCA, respectively.

Sector	Interview Participants Frequency (%)	QCA Participants Frequency (%)
Community	7 (13%)	6 (15%)
Hospital	3 (6%)	3 (8%)
Technical industry (manufactories)	3 (6%)	3 (8%)
Technical support and commercial industry (drugstores)	12 (23%)	11 (28%)
Academia	8 (15%)	2 (5%)
Professional and regulatory	5 (9%)	5 (13%)
Research and consultancy	6 (11%)	6 (15%)
Governmental and intergovernmental	9 (17%)	4 (10%)
Total	**53 (100%)**	**40 (100%)**

Table 6.1 Sectorial Distribution of Interview and QCA Participants.
Due to rounding, percentages may not add up to total.

(5) Frame Testing: The next step involves coding all highlighted passages using the predetermined codes. Every code was assigned a number that *matched* that of the relevant behaviour. For instance, if the first unit of the first interview (1.1) described a skill that corresponded with GbCF Behaviour 1.2.2, then that skill code would be assigned the value 1.2.2. In some instances, coding units were assigned to more than one code/behaviour.

(6) Frame evaluation and adjustment: Some changes and modifications were made to the GbCF. In particular, a number of existing GbCF codes/behaviours were *adjusted* so as to expand their scope to match the coding unit in question. Any text that could not be categorised using

the GbCF's framework was given a new *developed* code/behaviour outside of the standard GbCF domain. GbCF codes that failed to match any units of coding were labelled *empties.*

(7) Analysis. The above changes were made over the course of the first 27 transcripts, after which no modifications or adjustments were needed. The analysis was conducted on NVivo.

(8) Interpretation and presentation of findings: The final set of units and corresponding codes were entered into a Microsoft Excel Sheet, so as to allow for them to be tallied and categorised. The findings are presented in the following section, and examples of coding units are provided to illustrate and explain the coding process.

6.4 Results

6.4.1 Overview

The 40 interview transcripts considered in the QCA analysis yielded a total of 382 units of coding, which were assigned to 414 codes. Table 6.2 lists the number of codes for each type. The QCA results produced matches for 46 of the 100 GbCF codes. The remaining 54 behaviours were not used and were thus deemed 'empties'. Appendix 29 lists all of the unused behaviours. In terms of modifications to the GbCF, ten new behaviours were introduced, while six behaviours from the GbCF's 100 were adjusted. Table 6.3 lists the original versus adjusted behaviours, and highlights (in red) the exact nature of the adjustments.

The total number of codes was counted, and totals were calculated for every domain as well as each competency within that domain. Table 6.4 below lists the codes by domain and competency. Domain 4 of the GbCF ('Professional/Personal Competencies') emerged as the most coded domain, with close to half (49.3%) of all coding units being assigned to behaviours relating to the professional and personal competencies. The most coded competency within this domain is Competency 4.3 ('Legal and regulatory practice'), followed by Competency 4.1, ('Communication skills'). Behind domain four, the newly 'developed' behaviours received the highest number of codes. The third domain received the lowest count at 6.8%. The following sections will present the results for each domain, and will discuss the emergence of the developed behaviours.

Code Type	Frequency
Matched	46
Empties	54
Adjusted	6
Developed	10

Table 6.2 Codes by Type.

Code	Original Behaviour	Adjusted Behaviour
2.3.5	Document and act upon dispensing errors.	Document and act upon dispensing errors and exercise transparency.
4.1.3	Demonstrate cultural awareness and sensitivity.	Demonstrate cultural awareness and sensitivity, and social and emotional intelligence.
4.2.6	Identify learning needs.	Identify learning needs and be able to self-develop accordingly.
4.3.1	Apply and understand regulatory affairs and the key aspects of pharmaceutical registration and legislation.	Apply and understand regulatory affairs and the key aspects of pharmaceutical registration and legislation, including the various roles of regulatory bodies.
4.3.7	Understand the steps needed to bring medicinal products to market, including the safety, quality, efficacy and pharmacoeconomic assessments of the product.	Understand the steps needed to bring medicinal products, medical equipment and cosmetics, to market including the safety, quality, efficacy and pharmacoeconomic assessments of the product.
4.4.1	Demonstrate awareness of local/national codes of ethics.	Demonstrate awareness of, and follow, local/national regulations and codes of ethics.

Table 6.3 List of Adjusted Behaviours.

Domain	Competency	Frequency per Competency	Frequency per Domain (%)
1. Pharmaceutical Public Health Competencies	1.1 Health Promotion	3	34 (8.2%)
	1.2 Medicines Information and Advice	31	
2. Pharmaceutical Care Competencies	2.1 Assessment of medicines	7	33 (8.0%)
	2.2 Compounding medicines	2	
	2.3 Dispensing	15	
	2.4 Medicines	4	
	2.5 Monitor medicines therapy	3	
	2.6 Patient consultation and diagnosis	2	
3. Organisation and Management Competencies	3.1 Budget and reimbursement	1	28 (6.8%)
	3.2 Human Resources management	11	
	3.3 Improvement of service	3	
	3.4 Procurement	5	
	3.5 Supply chain and management	3	
	3.6 Work place management	5	
4. Professional/Personal Competencies	4.1 Communication skills	52	204 (49.3%)
	4.2 Continuing Professional Development (CPD)	11	
	4.3 Legal and regulatory practice	94	
	4.4 Professional and ethical practice	20	
	4.5 Quality assurance and Research in the work place	12	
	4.6 Self-management	15	
5. 'Developed' behaviours			115 (27.8%)
Total			**414 (100%)**

Table 6.4 Frequency of codes per domain and competency.

6.4.2 Domain 1: Pharmaceutical Public Health

The first Domain of the GbCF lists two public health related competencies: 1.1 (Health promotion), and 2.2 (Medicines information and advice). About 8% of all coding units were assigned to this domain. Table 6.5 lists its competencies, their behaviours and the frequency of codes for each behaviour. A significant number of units were assigned to behaviour 1.2.1. Participants perceived graduate skills in patient and public counselling to be less than optimal. A representative from the MoH's Clinical Pharmacy Directorate illustrates this: *"They can further develop their skills and not only dispense, but also study the patient, know what his/her issues are and give them the proper counselling" (15.5).* The head of a chain pharmacy also expressed: *"You need someone, a pharmacist who can counsel and advise patients" (31.10).*

Competency	Behaviour	Frequency
1.1 Health promotion	1.1.1 Assess the primary healthcare needs (taking into account the cultural and social setting of the patient).	2
	1.1.2 Advise on health promotion, disease prevention and control, and healthy lifestyle.	1
1.2 Medicines information and advice	1.2.1 Counsel population on the safe and rational use of medicines and devices (including the selection, use, contraindications, storage, and side-effects of non-prescription and prescription medicines).	27
	1.2.2 Identify sources, retrieve, evaluate, organise, assess and disseminate relevant medicines information according to the needs of patients and clients and provide appropriate information.	4
	Total	**34**

Table 6.5 Breakdown of Domain 1 codes.

6.4.3 Domain 2: Pharmaceutical Care

Domain 2 includes six pharmaceutical care-based competencies and, similarly to Domain 1, has been allocated approximately 8% of all units. Competency 2.3 (Dispensing) was the most coded in this domain, accounting for about half of the domain's coding units (Table 6.6).

The first behaviour in the Dispensing domain is concerned with pharmacists' ability to accurately dispense medicines for minor ailments, which was reported to be a recurring issue. Participants perceived pharmacists to be inadequately prepared to appropriately dispense over-the-counter (OTC) medicines for minor ailments. As one recent graduate, who currently works as a community pharmacist, reported: *"…OTC, for example: This used to be missing at university. They didn't teach us about OTC medicines and dispensing and what you should do if there was a cough or FLU" (41.3).*

Appropriately validating prescriptions (Behaviour 2.3.3) was reported in a number of ways. Several participants relayed the importance for pharmacists to *"make sure the written dose is correct" (7.9), "know how to process insured prescriptions" (31.2),* and *"[be] able to read the prescription" (33.4).*

Competency	Behaviour	Frequency
2.1 Assessment of medicines	2.1.1 Appropriately select medicines (e.g. according to the patient, hospital, government policy, etc.).	3
	2.1.2 Identify, prioritise and act upon medicine-medicine interactions; medicine-disease interactions; medicine-patient interactions; medicine-food interactions.	4
2.2 Compounding medicines	2.2.1 Prepare pharmaceutical medicines (e.g. extemporaneous, cytotoxic medicines), determine the requirements for preparation (calculations, appropriate formulation, procedures, raw materials, equipment etc.).	2
2.3 Dispensing	2.3.1 Accurately dispense medicines for prescribed and/or minor ailments and monitor the dispense (re-checking the medicines)	9
	2.3.3 Appropriately validate prescriptions, ensuring that prescriptions are correctly interpreted and legal.	4
	2.3.5 Document and act upon dispensing errors and exercise transparency.	2
2.4 Medicines	2.4.2 Appropriately select medicines' formulation and concentration for minor ailments (e.g. diarrhoea, constipation, cough, hay fever, insect bites, etc.).	2
	2.4.3 Ensure appropriate medicines, route, time, dose, documentation, action, form and response for individual patients.	2
2.5 Monitor medicines therapy	2.5.1 Apply guidelines, medicines formulary system, protocols and treatment pathways.	1
	2.5.2 Ensure therapeutic medicines monitoring, impact and outcomes (including objective and subjective measures).	2
2.6 Patient consultation and diagnosis	2.6.4 Discuss and agree with the patients the appropriate use of medicines, taking into account patients' preferences.	2
	Total	**33**

Table 6.6 Breakdown of Domain 2 codes.

6.4.5 Domain 3: Organisation and Management

Domain 3 lists competencies and behaviours relating to organisation and management abilities. It was allocated the lowest number of coding units. 'Human Resources Management' received the highest number of matches in this domain, while Behaviour 3.2.1 was assigned the highest number of codes (n=8). Table 6.7 can be referred to for a breakdown of the codes within the third domain.

There was a particular emphasis on the need for organisational and management skills, as exemplified by this observation from a participant: *"Why shouldn't there be a part or stream that focuses on team-building…team work?" (15.2).* One drugstore manager reported *"I think that the managerial skills and theories of management are not given enough…" (6.11).*

Competency	Behaviour	Frequency
3.1 Budget and Reimbursement	3.1.3 Ensure appropriate claim for the reimbursement.	1
3.2 Human Resources management	3.2.1 Demonstrate organisational and management skills (e.g. know, understand and lead on medicines management; risk management; self-management; time management; people management; project management; policy management.)	8
	3.2.4 Recognise and manage the potential of each member of the staff and utilise systems for performance management (e.g. carry out staff appraisals).	1
	3.2.5 Recognise the value of the pharmacy team and of a multidisciplinary team	2
3.3 Improvement of Service	3.3.2 Resolve, follow up and prevent medicines-related problems.	3
3.4 Procurement	3.4.3 Efficiently link procurement to formulary, to push/pull system (supply chain management) and payment mechanisms	2
	3.4.5 Select reliable supplies of high-quality products (including appropriate selection process, cost effectiveness, timely delivery).	1
	3.4.7 Understand the tendering methods and evaluation of tender bids.	2
3.5 Supply chain Management	3.5.3 Ensure effective stock management and running of service with the dispensary.	3
3.6 Work Place Management	3.6.2 Demonstrate the ability to take accurate and timely decisions and make appropriate judgments.	3
	3.6.6 Recognise and manage pharmacy resources (e.g. financial, infrastructure).	2
	Total	**28**

Table 6.7 Breakdown of Domain 3 codes.

6.4.7 Domain 4: Professional/Personal Competencies

The most frequently coded behaviours (Table 6.8) in the QCA analysis were from Domain 4. Indeed, close to half of all coding units were assigned to Domain 4 competencies. The domain also contained the majority of 'adjusted behaviours' (n=5).

Behaviour 4.3.1 (Applying and understanding regulatory affairs and key aspects of pharmaceutical registration) was the most frequently coded behaviour, as it was perceived to be a missing component from current graduates. In this regard, a regulatory sector representative commented: *"The skills or knowledge that the student acquires in this [regulatory]field is very superficial" (3.1)*. A drugstore manager expressed a similar view: *"I think it's very important for students in their undergraduate years to be taught a topic on regulatory affairs and be taught it well" (8.1)*.

Communication skills were the second most reported behaviour to be lacking in graduates. The view was shared by stakeholders across all sectors. The following selection of coding units illustrates this: *"[The graduate] lacks… the communication skills. This is also important, very important in the workplace"* (16.6, drugstore manager); *"the most important thing to me is patient communication"* (2.9, pharmacy owner); *"their patient communication skills need much improvement"* (36.7, hospital pharmacy manager); and *"I think the major issue is communication skills"*(30.2, JPA representative).

Competency	Behaviour	Frequency
4.1 Communication Skills	4.1.1 Communicate clearly, precisely and appropriately while being a mentor or tutor.	1
	4.1.2 Communicate effectively with health and social care staff, support staff, patients, carers, family relatives and clients/customers, using lay terms and checking understanding.	30
	4.1.3 Demonstrate cultural awareness and sensitivity, and social and emotional intelligence.	14
	4.1.5 Use appropriate (e.g. verbal and non-verbal) communication skills to build, report and engage with patients, health and social care staff and voluntary services.	7
4.2 Continuing Professional Development (CPD)	4.2.5 Identify whether expertise is needed outside the scope of knowledge.	1
	4.2.6 Identify learning needs and able to self-develop accordingly.	9
	4.2.7 Recognise own limitations and act upon them.	1
4.3 Legal and Regulatory Practice	4.3.1 Apply and understand regulatory affairs and the key aspects of pharmaceutical registration and legislation, including the various roles of regulatory bodies.	38
	4.3.2 Apply knowledge in relation to the principles of business economics and intellectual property rights, including the basics of patent interpretation.	6
	4.3.5 Demonstrate knowledge of marketing and sales.	27
	4.3.7 Understand the steps needed to bring medicinal products, medical equipment and cosmetics to market, including the safety, quality, efficacy and pharmacoeconomic assessments of the product.	23
4.4 Professional and Ethical Practice	4.4.1 Demonstrate awareness of, and follow, local/national regulations and codes of ethics.	16
	4.4.2 Ensure confidentiality (with the patient and other healthcare professionals).	1
	4.4.5 Take responsibility for own action and for patient care.	3
4.5 Quality Assurance and Research in the Workplace	4.5.1 Apply research findings and understand the benefits and risks (e.g. pre-clinical, clinical trials, experimental clinical-pharmacological research and risk management).	3
	4.5.2 Audit quality of service (ensure that they meet local and national standards and specifications).	5
	4.5.4 Ensure appropriate quality control tests are performed and managed appropriately.	3
	4.5.6 Identify and evaluate evidence-base to improve the use of medicines and services.	1
4.6 Self-management	4.6.1 Apply assertiveness skills (inspire confidence).	9
	4.6.2 Demonstrate leadership and practice management skills, initiative and efficiency.	6
	Total	**204**

Table 6.8 Breakdown of Domain 4 codes.

6.4.8 'Developed' Behaviours

A total of ten behaviours, listed in Table 6.9 below, were added to the coding frame in order to address cases where none of the existing codes adequately described the coding unit. One of the most commonly coded behaviours relates to "the ability to demonstrate awareness of different pharmacy sectors and roles they entail". Demonstrating effective research, writing and language skills was also commonly reported to be lacking in graduates. Analytical and critical thinking skills was another set of behaviours not commonly found in graduates. Behaviours 5.1.1 and 5.1.7 relate to industrial pharmacy skills; with several participants reporting that basic practical laboratory skills were absent, and deeming graduates' knowledge of the process of drug development and manufacturing to be limited.

Developed Behaviour	Frequency
5.1.1 Demonstrate and apply practical knowledge of pharmacy laboratory skills in industry settings.	22
5.1.2 Demonstrate awareness of different pharmacy sectors and roles they entail.	27
5.1.3. Demonstrate conflict management and resolution skills.	1
5.1.4 Appropriately select cost-effective medicines for the patient.	2
5.1.5 Understand moral responsibility of being a pharmacist and healthcare provider.	4
5.1.6 Demonstrate analytical and critical thinking skills.	9
5.1.7 Apply and understand pharmaceutical development and manufacturing processes (e.g. Good Manufacturing Practice).	15
5.1.8 Demonstrate knowledge of cosmetics sciences and usage.	7
5.1.9 Demonstrate effective research, writing and language skills.	23
5.1.10 Apply, understand and explain pharmaceutical and scientific concepts (e.g. drug metabolism).	5
Total	**115**

Table 6.9 Breakdown of Codes for 'Developed' Behaviours Domain.

6.5 Discussion

6.5.1 Key findings

The participants reported a multitude of skill and competency gaps. Mapping them against the GbCF resulted in a number of key findings. The fourth domain was found to contain the highest number of coded behaviours (49.3%), confirming that participants perceive graduates to be least prepared with respect to their Professional and Personal Competencies. The second highest proportion of codes (27.8%) was mapped to a 'fifth' domain, of 'developed' behaviours that were derived from the data itself. These 'developed' behaviours were not thematically homogenous, instead covering several miscellaneous competency areas. Legal and regulatory practice, communication skills, and medicines information and advice, were the three most frequently coded competency areas, accounting for just under half (42.8%) of all coded behaviours.

Of the legal and regulatory practice area, 'applying and understanding regulatory affairs and the key aspects of pharmaceutical registration and legislation including the various roles of regulatory bodies' was reported to be a performance gap in pharmacy graduates. This is not a surprising finding, for more than one reason: Firstly, participants working in industry (manufacturing and technical) formed the majority of the transcripts considered for analysis; while 36% of all participants work within the regulatory field. It therefore comes as no surprise that this competency area is the most frequently coded. Secondly, the field of regulatory affairs is a primary sector of pharmacy practice in Jordan. However, the possible over-reporting of this behaviour should not dissuade readers from considering this a serious performance gap.

On the other hand, participants from across all sectors consistently agree that the communication skills of young pharmacists are less than optimal. Communication skills with patients, health professionals, and the public are all included in the description of this competency gap. This is consistent with research studies reporting the challenges faced by Jordanian pharmacists in communicating with physicians and patients; which has been

identified as a key obstacle to the delivery of quality pharmaceutical care in both hospital and community settings (Otoom et al., 2002, Aburuz et al., 2012a, Tahaineh et al., 2009).

Counselling the population on the safe and rational use of medicines and devices was the third most frequently reported performance gap. Despite echoing previously reported problems in relation to pharmaceutical care, this finding is nevertheless quite unsettling. In their most basic role, pharmacists are experts on medicines; and counselling patients on medicines use is thus a minimum role requirement. Our earlier Study I, presented in Chapter 3, found that the training of pharmacists is unregulated, and that the basic curricula to be highly theoretical in content with minor emphasis on practical and experiential learning. Developing both counselling and communication skills in pharmacy students are therefore best achieved through the deployment of active learning modes, such as role-play and simulation scenarios (Basheti, 2014, Mesquita et al., 2010, Rao, 2011).

Perhaps one of the most significant outcomes of this study lies in the prominent role of 'developed' behaviours. Indeed, in many ways, these behaviours exemplify the true essence of a needs-based assessment that caters for context. This also confirms the flexibility of the GbCF tool, and is testament to its adaptable nature. FIPEd designed the GbCF as a starter mapping tool, one that was expected to adopt the shape of the settings it is applied to.

As indicated earlier, the 'developed' behaviours that have emerged from the QCA analysis cover several competency areas, such as industry-specific skills (e.g. Practical Laboratory Applications) as well as personal and professional competencies (e.g. Critical and Analytical Thinking). One of these notable 'developed' behaviours is the ability to demonstrate effective research, writing and language skills. This is unsurprising in light of the study by Bahnassi (2015), which sought to evaluate the level of integration of formal research skills in pharmacy programmes in selected Arab countries, including Jordan. Bahnassi's results provide strong corroboration of a key finding of the present study; namely that the level of integration is only partially present.

In addition, the list of developed behaviours may shed much-needed light on some of the limitations of the GbCF tool. For instance, it has highlighted the complete absence of any industry-related pharmacy behaviours, competencies or domains in the GbCF. Moreover, a number of the behaviours were found to be overlapping, and choosing the most relevant code was therefore far from straightforward. For instance, the behaviours in Competency 3.2 (Human Resources Management) and Competency 4.6 (Self-Management) contain vaguely similar behaviours.

In this regard, it may be worth considering using one of the alternative competency frameworks (e.g. RPS Foundation Pharmacy Framework) as a coding frame; which could serve as a comparative method of analysis as well as help validate the GbCF-obtained results of this study.

6.5.2 Study strengths and limitations

This study employs a creative and novel approach to conducting a needs-assessment analysis. To our knowledge, this is the first study to use QCA to this end. Using the GbCF as a coding frame not only presents an opportunity to validate the merits of the framework; but also provides an interesting case of directed content analysis.

Although QCAs usually involve at least two coders, time and resource constraints did not allow for this in the present study. A double coding would have greatly increased the accuracy of the predetermined categories and the resultant codes (Hsieh and Shannon, 2005). However, future work can include efforts to validate the results of the present study by using a second independent coder (preferably an expert user of the GbCF) to verify the results.

In the meantime, caution should be exerted when drawing broader inferences from this study. In particular, the over-quantification of the findings should be avoided until further validation, possibly using an alternative coding framework, is obtained. Moreover, as is the case with all qualitative interviews, the possibility that the sample used in the present study may not represent the views of the general population of stakeholders is one that can never be dismissed entirely.

6.6 Conclusion

This study has attempted to assess the 'Preparedness for Practice' of Jordan's pharmacy graduates by examining the competency gaps of this group through the lens of a global competency framework, namely the FIPEd's Global Competency Framework. To that end, a Qualitative Content Analysis was conducted, involving the analysis of 40 interviews with key stakeholders from across the sector. The findings were collected, collated and analysed, and strongly suggest that pharmacy graduates in Jordan are perceived by their sector to lack a number of key competencies across several of the GbCF's domains. Most notably, graduates' preparedness for practice was found to be especially lacking with regards to legal and regulatory practice, effective communication skills and proper patient counselling, as well as other competencies. The study was an opportunity to examine the strengths of the GbCF tool, such as its flexibility and adaptability to variations in settings, as well as weaknesses such its inadequacies in locating, and articulating, industry-specific issues. This study is the first systemic attempt to investigate the 'Preparedness for Practice' of Jordanian pharmacy graduates. It is also the first study of its type to deploy the FIPEd's GbCF framework to study the Jordanian Pharmacy Sector context. As such, its contribution to knowledge resides not only in establishing an up-to-date and methodologically-robust mapping of the sector's competency gap, but in confirming a number of findings - established both the other studies in this project, as well as in the wider literature – with regards to the specific challenges facing the development of the pharmacy workforce in Jordan.

Chapter 7 Summary Discussion and Conclusion

7.1 Principal Findings

This was a mixed methods project composed of four studies. The project's principal findings revolve around three central themes: the general profession, its workforce, and education.

7.1.1 Profession

We were able to assess stakeholder perspectives on the state of the pharmacy profession in Jordan, and we identified and validated eight main challenges perceived to be hindering its advancement:(1) graduates unpreparedness for practice; (2) shortcomings in education accreditation and quality assurance; (3) unregulated pre-registration training and substandard examination; (4) the absence of CE/CPD requirements and workforce development policies; (5) the lack of national workforce planning strategies; (6)low pharmacist remuneration and wage rate; (7) illegal dispensing of medicines by pharmacy assistants; and (8) the failed expectations of PharmD graduates. Some of these challenges came as no surprise (e.g. the absence of CE/CPD systems has always been known), while some of them confirmed anecdotal claims (e.g. the illegal dispensing of medicines by pharmacy assistants was reported in past commentaries). But some were newly reported and at least one of the challenges was considered a shocking revelation: namely, that it was common for pharmacists to skip some, most or all of their pre-registration training and still manage to receive a license to practice.

These findings, from Study I, shed light on serious issues that not only affect the development and integrity of the profession, but also pose health risks to the public. We believe that this is the first study of its kind in Jordan. Also, we couldn't find any other local or global study that employed the scope and methodological approach that we undertook. We proposed a new conceptual framework that could become the new alternative to traditional theories of the profession; and we used participant validation – considered 'gold standard' in qualitative research – to validate our findings, map them against the framework and draw stakeholder-led recommendations for development.

7.1.2 Workforce

In terms of the workforce, we were given unprecedented access to the country's largest database on pharmacists. We derived data from the JPA's register to examine the workforce's profile and trends and to also evaluate the quality of the current available intelligence, providing the most comprehensive picture yet using the available intelligence. Previous to this study, little was known about the workforce's characteristics with the exception of total numbers. We found that over the past decade, the workforce has grown by more than 45%, totalling more than 15,000 pharmacists by the end of 2014. We found that the workforce exhibits a number of distribution imbalances. Gender imbalances are noted as the workforce remains female-dominated; this finding is consistent with most pharmacy workforces around the world. Mapping the workforce against Jordan's governorates found a gross imbalance between the different areas. Finally, sectoral imbalances between the private and public sector are also overwhelming. When benchmarked against international standards, we identified gaps in the workforce intelligence. For instance, little is known about pharmacists' employment status, working time and occupational categories. Unless addressed, the limitations in the workforce intelligence will remain an obstacle to any effective workforce planning initiatives – which are absent at the moment as pointed out in Study I.

7.1.3 Education

In Study III, we collected academic and institutional capacity information from the pharmacy schools using the FIP-WHO Global Survey of Pharmacy Schools. A 2012 pilot study using the survey in Jordan has been a valuable experience that dictated the data collection approach. Multiple sources were used to maximize the validity of the data. We collected and presented information about academic staff, academic programmes, student and graduate numbers, admission requirements, cost of education and accreditation and quality assurance processes. There has been a surge in the number of schools in recent years, with six schools in existence for less than six years. All 14 schools teach the BPharm which is considered the main national programme. Three of the schools offer a new specialized track BPharm with two choices for prospective students, Industrial Pharmacy and Pharmacy Management. Two schools offer the

PharmD degree. The national curricular requirements illustrate a highly theoretical educational programme with limited room for practical and/or experiential learning. This study was a useful provider of baseline information about the current status of pharmacy education in Jordan. We were also able to know more about the academic workforce, filling some gaps highlighted in the workforce Study II. We were able to point out that pharmacy education in Jordan is undergoing a transition.

Our second study on education, Study IV, expands the educational scope of Study III; it set out to identify the performance gaps of graduates as an indicator of their preparedness for practice and confirm what was reported from the profession study on graduates. For this Study, the interview transcripts (first used in Study I) were analysed again using a qualitative content analysis (QCA) approach. This method of analysis is a systematic and flexible way of reducing data. QCA involves a coding frame that guides the coding process. The frame could be built from the data or could pre-exist from previous research. We used the FIP's Global Competency Framework and its 100 behaviours as the coding frame. The analysis was conducted using NVivo. In the pilot phase of the analysis, six of the behaviours were adjusted and ten data-driven ones were added. At the final stage, the codes were entered into an Excel sheet to be arranged and counted. Performance gaps were identified across all four domains of the Framework as well as the 'fifth' domain (i.e. ten developed behaviours). About 50% of all codes belonged to Professional/Personal competencies, 30% to the 'fifth' domain of developed behaviours, 8% to Pharmaceutical Care competencies, another 8% to the Pharmaceutical Public Health competencies and 7% to Organisation and Management competencies. The most coded competencies relate are, in order: legal and regulatory affairs, communication skills and medicines counselling. The study concludes that graduates are generally not perceived to be prepared for practice with a variety of identified performance gaps across different practice domains.

7.2 Project Summary

The direction, methodologies and remit of this project have undergone numerous and significant transformations over the course of the past four years. Most notably, the project's scope has been considerably expanded from its original iteration, as articulated in the proposal draft. While this is hardly unusual in research, it is even less so in a project set in a needs-based development context.

For instance, early interviews conducted for this project, which were at the outset intended to be exclusively concerned with pharmacy education, soon started to shed light on another, broader set of issues. I discovered that participants were eager to share their concerns about the state of their profession, and these voices were persistent and loud enough to force a re-framing of the project along a more ambitious plane. This new direction manifested itself in the design of an expanded, more elaborate interview guide. A lengthening list of questions was added to the initial set, with a view to explore not only the challenges faced by the Jordanian educational sector, but also those problems relating to professional regulation and practice that participants kept raising in those early exchanges. As the project's scope expanded, a myriad of challenges emerged in tow, necessitating further adjustments to the methodological and intellectual approach underpinning the research.

Some of the issues affecting the sector highlighted by the interview participants were fundamental and structural in nature, while others, such as the widespread non-adherence to the official pre-registration training requirements, served as telling examples of the bleak state of the profession. Analysis of the initial round of interviews produced a set of eight principal challenges facing the development of the pharmacy sector in Jordan. However, the seemingly remarkable novelty and significance of the findings was in marked contrast to the paucity of published literature on the topic of Jordan's pharmacy sector, which was extremely limited. As a result, we felt it was preferable, even necessary, to validate these findings first, using a set of validation focus group sessions, before sharing them with the world.

One of the key objectives of this project has been to produce a contribution to the literature that would also prove a helpful guidance for future policy-making efforts. With this in mind, it was essential to understand the identified challenges; notably their structural origins and defining features, in order to be able to reach evidence-based recommendations to accompany them.

It was also clear at the outset that the project should be informed by a coherent theoretical perspective. Theories of professions were explored, in the hope of finding a conceptual framework that can guide the project's interpretation process. Alas, the search did not prove fruitful. Professions theories seemed largely outdated, static and unidimensional; most problematically, they were unsuitable for guiding interactive and explanatory mapping approaches.

The quest for an appropriate theoretical approach eventually led to FIP's three-pronged (Education – Regulation - Practice) Conceptual Framework, which proved ideal in meeting the needs of the project. Indeed, it was deployed not only to to articulate and map the eight identified challenges, but also to help achieve a better understanding of them. The framework was also used to formulate targeted recommendations, based on the direct input of the original participants. In summary, although Study I (presented in Chapter 3) was not included in the initial project planning, it ended up becoming a vital and highly rewarding component of it.

Likewise, Study II had not originally been included in the initial project plan. However, a few months into the fieldwork phase, which involved frequent visits to the JPA's headquarters to retrieve information, collect documents and conduct interviews, an unexpected opportunity to access the JPA registration data presented itself. This was, to the best of my knowledge, the first time a researcher had been offered such an opportunity of direct access to the workforce registry.

As a result, the remaining time of my stay in Jordan involved pre-arranged visits to the JPA headquarters. I was assigned a desk where I could work on extracting and collecting the workforce data. The process was slow and the registry's interface was not user-friendly. Having

no prior indications of the nature of the data held within the registry records, my focus was on extracting as much of the registry's raw data as possible in the time permitted.

7.3 Implications of Findings

Some of the issues reported by participants, such as the widespread registration of pharmacists who had completed none of the legally requisite training, or the dispensing of medicines by unqualified personnel, present serious implications for public health and safety. Unfortunately, due to the current weakness of reporting mechanisms and systems, it remains very difficult to meaningfully quantify these risks, or trace clear causal links between these issues and, for instance, patterns of dispensing error incidents (Kheir et al., 2008).

While the duty to comply with regulatory, ethical and professional standards is an individual responsibility, the absence of a binding Code of Ethics for pharmacists is certain to make compliance even less likely. In this context, FIP's latest Statement of Professional Standards (2014a) strongly recommends that pharmacy associations around the world develop an up-to-date 'Code of Ethics' using its list of 9 'minimum ethical obligations' to guide any national authorities interested in drafting such a code.

Jordan has duly responded to these recommendations, and the latest Good Pharmacy Practice (GPP) White Paper (2015b), published by the JPA's GPP Committee, introduced 14 Codes of Ethics for Jordan's pharmacists. While these do not carry any disciplinary powers at present, they are an important and necessary stepping stone towards creating and nurturing an ethical culture of practice. The JPA's GPP codes also offer an excellent platform upon which a legally binding version can be introduced in future.

However, such local efforts must ensure not only that local business and practice environments facilitate and reward ethical behaviour, but also develop ethical competence through the education of prospective and practicing pharmacists alike (Wingfield et al., 2004).

The effective implementation of research outcomes into practice is also essential, in order to prevent valuable lessons going unheeded. Of course, evidence-based research needs to be

supplemented with practice-based evidence, which is ultimately the context in which policy-making efforts need to prove their effectiveness.

An important consideration underlying this project has been the need to highlight the central role played by professional associations in the development of the health workforce. Indeed, the evidence suggests that the success or failure of an association can determine whether its role is as a driving agent of reforms and progress, or as an obstacle to them.

Professional pharmacy organisations are instrumental in the development of the profession and subsequent advancement of patient care, (Anderson, 2002) as echoed by calls for them in countries lacking a representative body (Hasan et al., 2011, Kheir and Fahey, 2011).However, the current professional body in Jordan is exhibiting clear signs of institutional dysfunction by not successfully fulfilling its mission in pharmacy practice regulation or in offering representative support.

Indeed, the role of the JPA's leadership and management has been continuously questioned by all participants in this study; many of whom find the current professional body to be failing in fulfilling its mission, both in terms of pharmacy practice regulation, and in offering appropriate representational support. Several participants have blamed the long-running political and electoral rivalries that have marred the JPA for years for the lack of any long-term strategic vision or planning for the future of the pharmacy profession at the top of the JPA. For instance, at the time of writing, the JPA has been without an elected Council for a year, presaging a troubled immediate future for the association's current leadership.

Pharmacists' perceptions of, and agreements with, professional strategies, particularly those enacted and driven by their representative bodies, are key to successful implementation (Scahill et al., 2010). Indeed, pharmacy professional organisations around the world recognise the importance of engaging with their members and understanding their views and concerns in order to pursue effective strategies and visions (Jorgenson et al., 2011). And yet, several participants have highlighted the lack of connection that many JPA members feel with their association, a disconnect many believe is due, at least in part, to the JPA's meagre and haphazard communication and outreach efforts.

The issue of leadership is absolutely crucial to the prosperity and success of the profession. A governing body has to offer significant and decisive leadership and, as such, a determined and inclusive leadership effort that encompasses all branches of pharmacy is urgently needed. The establishment of policies but also the continuous monitoring of their proper implementation is an essential step in the JPA's reinvention of its role as a professional body.

It comes as no surprise that the JPA's leadership and management have come under criticism from many study participants, or that many have highlighted the noxious role of political rivalries on the JPA's capacity to provide the necessary solutions and vision for the future of the profession. Nevertheless, the fact that JPA committee and board members, as well as government officials and industry representatives, had been involved at every stage of this study, is a greatly enhances this study's potential impact in terms of driving positive changes in practice and policy-making.

Policy reform in the pharmacy sector is no easy task, and a collective, evidence-based, multi-disciplinary approach is necessary to help inform and guide policymaking efforts in this regard. Without a strategic plan for professional development, overseen and pursued by a visionary leadership, but involving all relevant stakeholders, the state of the pharmacy profession in Jordan is doomed to continue on its downward spiral. The researchers hope is that this study's findings, and the resultant recommendations, will serve as a useful roadmap for designing and implementing much-needed changes to both current practices and policies.

While research produced within the western academic sphere has always enjoyed a greater visibility than that produced elsewhere in the world, it is important that researchers working in developed countries are able to conduct research using the same tools and methods. In particular, enhancing cross-national comparability of studies should be a cornerstone of research efforts into areas of global reach and concern, such as health and education. In particular, any research project featuring a single-country setting needs to be theoretically developed and configured in such a way as to lend itself well to international comparative reviews and analyses.

Country-level assessment and situational analysis adds to the global evidence base and is a prime example of the needs-based development projects. This is one of the main reasons the present study has adopted a theoretical framework developed by an international body (FIP), as it would facilitate such cross-country synergies between national research efforts addressing the same questions.

Furthermore, the present project is also an attempt to correct certain disparities in the research literature on the topic of Jordanian pharmacy sector. More specifically, the majority of the pharmacy education literature produced by Jordanian researchers and writers has focused heavily on the PharmD degree and its links to the up scaling of pharmaceutical care in practice, which resulted in the main national programme, the BPharm – which as we now know produces the vast bulk of the workforce – to become relatively overlooked and somewhat neglected. Nevertheless, we believe our studies, which surveyed and interviewed institutions and stakeholders about the country's main national programme and its outcomes significantly expands the thin evidence base and will, it is hoped, redirect much-needed attention to the BPharm.

While the present project has been wholly focused on the pharmacy profession, it has nevertheless been able to offer, by virtue of inevitable cross-sector overlaps and links, a number of insights about other segments of the healthcare sector in Jordan. In particular, a number of the issues that have been raised by stakeholders have centred on the problematic relations (or lack thereof) between pharmacists and their fellow healthcare professionals, notably doctors and nurses. In this regard, the present project can offer a useful template for similar studies aimed at investigating opportunities and challenges facing other healthcare sectors, in Jordan and elsewhere. Further studies could also examine the role of the pharmacy support workforce in the various settings (academic, industry, community, hospital), a vital facet of the healthcare industry yet one that remains acutely under-examined.

In terms of its methodological approach, the present project offers a number of best practice recommendations, notably the use of participant validation of findings. Further research can be

conducted to establish a more detailed account of how such a validation process can be effectively and rigorously deployed in qualitative health research. A systematic review of the available literature on this topic may be a good starting point in this regard.

In the quest for the ideal theoretical framework to guide the project, the theory of professions was examined and found severely wanting as a tool for investigating this topic.

On the other hand, a number of theoretical tools and conceptual paradigms have proved highly effective in pursuing the research aims of the project, a notable example being the 'Capacity Development' theories, which have enormous potential in terms of articulating both the issues and the potential solutions involved in developmental policy-making efforts.

7.4 Opportunities for Pharmacy

We live in an age where the resources, tools and support structures for pharmacy educators are at their highest. (FIPEd) And yet, taking advantage of the wealth of resources on offer is not as straightforward a task as it may seem. Implementing tools such as CPD/CE, for instance, whether in a mandatory context or otherwise, does not come without its challenges, as demonstrated in FIP's Global Report on CPD/CE in Pharmacy- which, by collating information from 66 countries, provides the most comprehensive and up-to-date overview of pharmacy CPD/CE current practices to date.

The Global Report is intended to drive, and shape, informed action towards better policies. In this context, Rouse et al. (2014) have provided a step-by-step framework to facilitate the development of CPD/CE accreditation procedures in their "Continuing Pharmaceutical Education: Guide to Establishing Quality Assured and Accredited Programs" report. Especially aimed at countries currently without pharmacy CPD/CE systems, but with sufficient resources to develop an accreditation body, the framework may guide the JPA's existing CPD/CE Committee in achieving tangible solutions.

In the Middle East, inter-country variations in the state of the pharmacy profession are pervasive. However, the overall level of pharmacy services is inadequate; and where positive

developments exist, these tend to be institutional examples – as opposed to being national trends - and typically fall behind those of its Western counterparts.

For instance, in politically and economically stable countries where the local healthcare system is otherwise advanced and modern, the role of pharmacists and the level of pharmaceutical services remain limited and little understood. As pharmaceutical care becomes an integral, indeed basic, component of the pharmacy profession worldwide, and despite community pharmacists being the public's first point of access, patient-pharmacist non-interaction is prevalent in the Arab states and, as such, their roles are predominantly traditional and resembling that of 'shopkeepers' (Al-Worafi, 2014).

Moreover, most countries now offer internationally-accredited PharmD degrees, yet face challenges in implementing pharmaceutical care models and expanding the practice scopes of hospital pharmacy.

Despite this range of issues, there is a strong regional desire to advance pharmacy practice and education (Kheir et al., 2008, Kheir and Fahey, 2011). The UNESCO Office in Beirut and the Regional Education Bureau for the Arab States are producing a *Regional Higher Education Policy Framework and Resource Pack*. As part of the Pack, an initial draft was made offering "recommendations for quality assurance and competency based pharmacy education in the Arab Region" (Amin and Bajis, 2015).

This document, the first of its kind, presents a roadmap to creating a regional pharmacy education policy framework for delivering competency-based education and training for pharmacists in the region. Drawing upon the GbCF and other FIPEd offerings, it is targeted at policymakers and stakeholders as a guidance tool for advancing pharmacy education in their respective countries. The impact, implementation and effects of this initiative is yet to be observed, as the project is still in its infancy; nonetheless, it confirms the presence of a regional drive and desire towards greater pharmacy education development. HE accreditors and pharmacy educators in Jordan can make use of such an initiative as a guided approach to developing current accreditation requirements.

7.5 Towards Strengthening HRH Capacity

Pharmacists in Jordan have shown that they can positively affect patients' health. A competent pharmacy workforce is critical to the delivery of quality improvement in medicines' use outcomes. HE institutions are clearly responding to market needs by creating new specialised tracks and professional diploma. However, this should not divert attention from improving the main national programme. Indeed, in order for HE policymaking in the pharmacy sector to be effective at meeting the pharmacy healthcare needs of the country, it is essential for it to be conducted in line with national health and economic reform agenda.

In Study II, presented in Chapter 4, we presented a picture of the current status of the workforce, notably in terms of its growth trends and distribution patterns. The JPA's workforce registry data was also used to assess the limitations of the register as a starter tool for workforce planning. In short, the quality of workforce intelligence is intrinsically linked to effective workforce planning, and encouraging better workforce intelligence is an effective way of strengthening workforce capacity.

Jordan's reliance on the human capital development and knowledge economy approach make this study highly relevant for the local economic agenda. Moreover, the country's development and growth are heavily reliant on its human resources. With health being a major part of the economy, human resources for health are of supreme importance; in particular, the success of the current health reform agenda in Jordan is tied to the health sector's HRH capacity.

7.6 Conclusion

The evidence-based analyses undertaken in this project can help inform a number of present and future reform initiatives by Jordanian pharmacy bodies and professionals, paving the way towards significant progress for the pharmacy profession, the healthcare sector and the country's wider economic and social prospects.

The project has also brought to the fore important governance-related issues in pharmacy policy formulation, notably in terms of the role of the JPA in enforcing regulatory and professional standards. It additionally offers a number of evidence-based insights into needs-based development policy-making that can shape similar efforts in other developing countries.

Above all, an evidence-based approach to developing the pharmacy sector in Jordan can help inform both current and future reform initiatives by Jordanian pharmacy bodies and professionals. Of course, as has been discussed in earlier sections, many of the problems identified in this study are likely to have international and regional resonance and, as such, the findings can be of use, it is hoped, not only to Jordanian pharmacists, but to the pharmacy profession worldwide.

The studies have converged to serve the purpose of this project, to strengthen the capacity of pharmacists in Jordan. They triangulated to address the two main components of HRH capacity building: education and training, and governance and planning. This project and its components can provide guidance and examples for researchers and policymakers who wish to produce outcomes that directly and indirectly serve to strengthen the capacity of health workforces.

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Appendices

Appendix 1 Squires's Criteria

Methodological Recommendations for Cross-Language Qualitative Research

To evaluate if a study used the methodological recommendations appropriately to maximize the trustworthiness of translated qualitative data, answer "yes," "partially," or "no" to the statements.

Conceptual Equivalence

1. Provided a rationale for why the analysis occurred in the chosen language, especially if it was not the same language as the participants.
2. Developed a translation lexicon for multi-language studies to ensure conceptual equivalence.
3. Had the translation validated by a qualified bilingual individual not directly involved with data collection or the initial translation.

Translator Credentials

4. Briefly described the translator's qualifications or previous experience with translation.
5. Described the researchers level of language competence.
6. Described the researchers or translators identity in contrast to that of the participants.

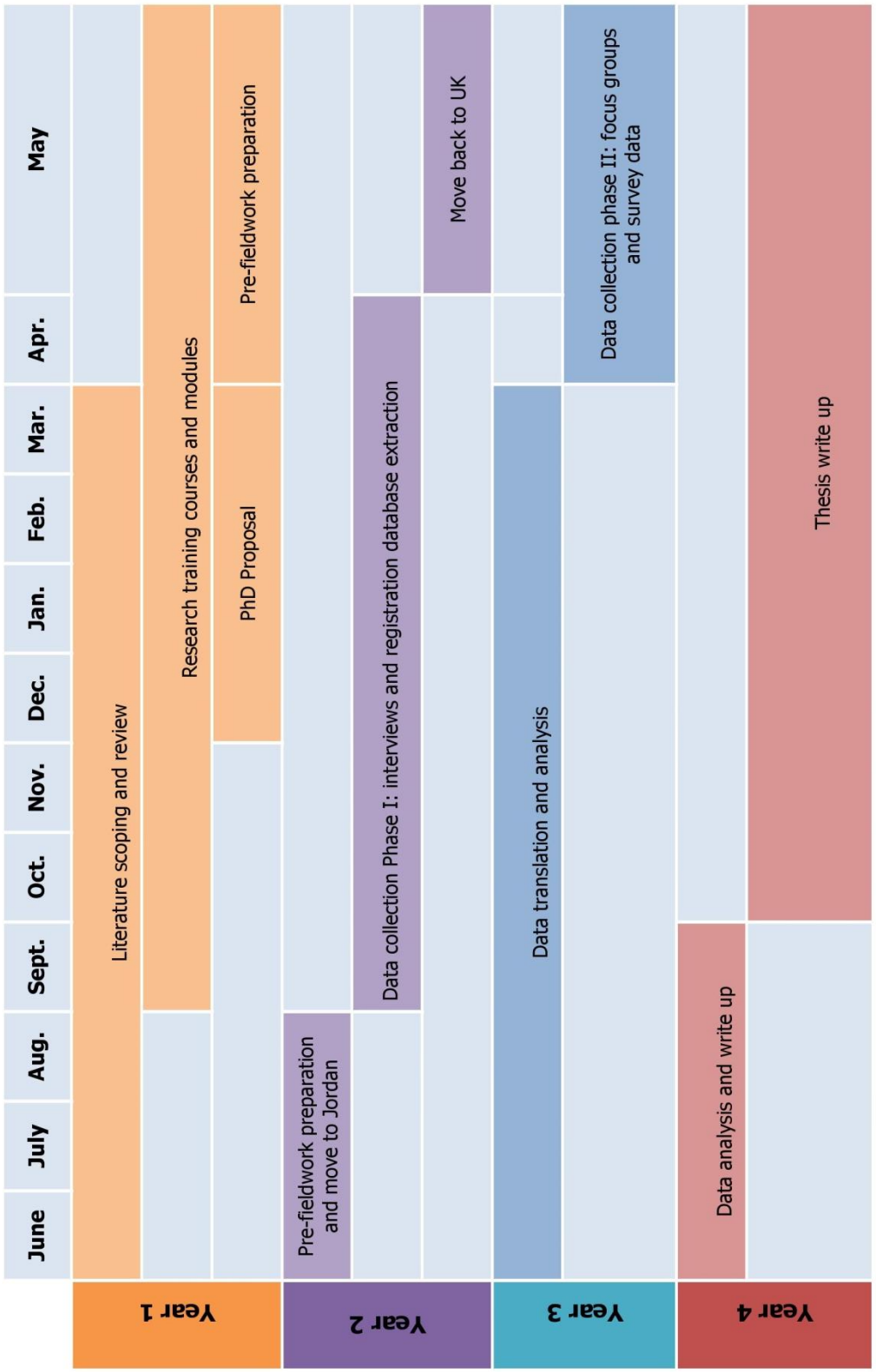
Translator Role

7. Described the translator's role in the study.
8. Described at what point(s) during the research process they used translation services.
9. Identified who conducted the analysis and in what language it took place.
10. Provided a rationale for using multiple translators when the study took place in only one language.

Methods

11. Selected the appropriate research method for the cross-language qualitative study.
12. Pilot tested the translated interview guide prior to conducting the study.
13. Indicated the country of origin n of all participants in the study, even if they came from linguistically similar regions (i.e. South America).
14. Stated in the limitations section or other appropriate location that translation or use of translators may have affected the results.

Appendix 2 Research Project Timeline



2013/51/JG

School of Education – Research Ethics Approval Form

The University of Nottingham

Name Linda R. Bader
Main Supervisor Claire Anderson & Simon McGrath
Course of Study PhD
Title of Research Project: Evaluating Graduates' Fitness for Practice- A Study on Pharmacy Education in Jordan

Is this a resubmission? ~~Yes~~ / No Date statement of research ethics received by PGR Office: 14/5/2013

Research Ethics Coordinator Comments:

I have read all the documents accompanying this submission and I am satisfied they meet the requirements for ethical clearance, with the observations made below. There is no need for a re-submission as long as the observations are acted upon.

Observations:

1. Participant information form: Please add the generic email address of the School of Education ethics co-ordinator.
2. Participant consent form: Please add 2.1. Researcher's name and contact details; 2.2 Main supervisor's name and contact details; and 2.3 the generic email address of the School of Education ethics co-ordinator.

I consider this research to be above minimum risk ☐

Final responsibility for ethical conduct of your research rests with you and your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Educational Research Association (BERA) and the University Research Ethics Committee.
http://www/educationstudentintranet/researchethics/index.aspx http://www.bera.ac.uk/publications/Ethical%20Guidelines *If you have any concerns during the conduct of your research then you should consult those Codes of Practice and refer again to the School of Education's Research Ethics Committee.*

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Outcome:

Approved ✓ Revise and Resubmit ☐

Signed: Name: Dr J. Gimenez (Research Ethics Coordinator) Date: 04.07.2013

Appendix 4 Pilot Employer Interview Guide

Graduate Performance	• In your sector, what job positions are offered to pharmacists? • As a pharmacy employer, what are your thoughts on this country's pharmacy graduates? • How well are they equipped for your job(s) description(s)? • What do you consider to be good employees/pharmacists? • What kind of skills pharmacy students need to become good employees/pharmacists/offer your services?
Educational Provision	• What are your thoughts on pharmacy education in Jordan? (esp. if pharmacy graduate him/herself) • How important do you think undergraduate education is in preparing pharmacists for the workplace? • How effective is the current curriculum in equipping graduates with the skills you require? • What changes, if any, would you like to see? • Does your company/business/organisation partner with any university? In what way (e.g. teaching, funding etc) • Do you offer any training/courses for your employees?

Appendix 5 Revised Employer Interview Guide

Graduate Performance	• What services does your company/organisation/sector offer? • In your sector, what job positions are offered to pharmacists? • Do you have clear job descriptions for these positions? • As a pharmacy employer, what do you think of the pharmacy graduates' preparedness to work in this field? • What skills or competencies do they lack, if any? • What do you do to equip them with these skills? (e.g. in-house training, orientation, etc)
Educational Provision	• What are your thoughts on pharmacy education in Jordan? • What changes, if any, would you like to see in pharmacy education in Jordan? • Is there any relationship between your company/organisation and the pharmacy schools?
Pharmacy Profession	• Let's talk about the profession in general, what challenges do you think the pharmacy profession faces in Jordan? • What are the most important changes/solutions that you want to see?
Participant Recruitment	• Have you employed fresh graduates recently (first job)? • Can you recommend someone in the sector/industry whom you think I should also interview?

Appendix 6 Final Interview Guide

Semi-structured interview guide (all participant groups)
Tell me about the nature of your practice and your role. What challenges do you face in your practice setting? What are your thoughts on pharmacy education in Jordan? What do you think of the quality of graduates? What skills or competencies do they lack, if any? What changes, if any, would you like to see in pharmacy education in Jordan? With regards to your practice, what are your thoughts on the regulation of pharmacy? What challenges do you face? What changes would you like to see in regulation? What do you think of the regulatory role of the JPA? What do you think of the JPA as a professional body? Do you perceive the JPA to be carrying its responsibilities effectively? If not, why? Generally speaking, what do you think of the overall status of the profession here in Jordan? Why? What challenges do you think it faces? How do they affect you in your practice? How do you think those challenges should be addressed? Who should be responsible for addressing them? What is the most important change that you want to see in the profession? Why?

Appendix 7 Participant Information Sheet

PARTICIPANT INFORMATION SHEET

وثيقة معلومات المشارك

Project Title: Evaluating Graduates' Fitness for Practice-A Study on Pharmacy Education in Jordan

عنوان المشروع: تقييم كفاءة الخريجين في ممارسة المهنة- دراسة حول التعليم الصيدلي في الأردن

08/10/2013 Version 3.0

Dear Participant,

My name is Lina R. Bader and I'm a researcher at the University of Nottingham's School of Pharmacy in the United Kingdom. The reason for this letter is to invite you to take part in my PhD research project on pharmacy education in Jordan. Before you decide to participate, please take the time to read the information enclosed in this sheet. Should you need more information or clarification, please do not hesitate to contact me or my supervisory team.

عزيزي المشارك،

اسمي لينة بدر وأنا باحثة في كلية الصيدلة في جامعة نوتنغهام، المملكة المتحدة. سبب هذه الرسالة هو دعوتكم للمشاركة في مشروع بحثي لرسالة الدكتوراة في التعليم الصيدلي في الأردن. قبل أن تقرر المشاركة، يرجى أخذ الوقت الكافي لقراءة المعلومات المرفقة في هذه الورقة. إذا كنت تحتاج إلى مزيد من المعلومات أو التوضيح، لا تترددوا في الإتصال بي أو بفريق المشرفين.

1. What is the purpose of the study?

The aim of this study focuses on developing pharmacy education in Jordan on a national level through identifying graduates' performance gaps with respect to analysing local needs and stakeholder requirements, cross-examining those needs with those developed in undergraduate education, and evaluating the academic capacity to accommodate and integrate those needs.

1. ما هو الغرض من الدراسة؟

الهدف من هذه الدراسة يركز على تطوير التعليم الصيدلي في الأردن على المستوى الوطني من خلال تحديد شغرات أداء الخريجين. سيتم ذلك عبر تحليل الاحتياجات المحلية ومتطلبات أصحاب المصلحة، مقارنة هذه الاحتياجات مع تلك التي وضعت في مجال التعليم الجامعي، وتقييم القدرات الأكاديمية لاستيعاب ودمج هذه الاحتياجات ضمن النظام الدراسي.

2. Who is organising and funding this research?

As mentioned earlier, this research is being organized for the completion of my PhD qualification, to be granted by the University of Nottingham. This self-funded study is conducted under the supervision of Prof Claire Anderson and Prof Simon McGrath and is supported by the WHO-UNESCO-FIP Pharmacy Education Initiative. This study has also been approved by the University of Nottingham, School of Education Ethics' Committee.

2. كيف يتم تنظيم وتمويل هذا البحث؟

كما ذكر في وقت سابق، يتم تنظيم هذا البحث لاستكمال الدكتوراه الممنوحة من قبل جامعة نوتنغهام. وتجري هذه الدراسة على التمويل الذاتي تحت إشراف البروفيسور كلير أندرسون والبروفيسور سيمون ماكغراث وبدعم من مبادرة التعليم الصيدلي التابعة للإتحاد الصيدلاني الدولي. وكما تمت الموافقة على هذه الدراسة من قبل لجنة أخلاقيات كلية التعليم، جامعة نوتنغهام.

3. Why have I been asked to participate?

You have been identified as one of the key stakeholders with relation to pharmacy education and we are very much interested in your opinions on the matter.

3. لماذا طلب مني المشاركة؟

لقد تم التعرف عليك كواحد من أصحاب المصلحة الرئيسيين فيما يتعلق بالتعليم الصيدلي ونحن مهتمون للغاية في آرائك بشأن هذه المسألة.

4. What will my participation entail?

If you agree to participate, you will be contacted by me to arrange a suitable date for an interview. In the interview, current matters of pharmacy education in Jordan will be discussed and depending on your role, your opinions will be sought with regards to achieving the aims of the study. You are free to discuss any other issues you deem important to the topic. You are likewise free to not answer any questions you do not wish to discuss.

A typical interview will last between about 1 and 1.5 hours; however if any less or more time is needed you will be informed. If you need to cancel or reschedule the interview for any reason, do not worry. All you need to do is inform me and a more suitable time will be arranged. If a face-to-face interview is not possible, you may wish to conduct the interview via the telephone. Alternatively, you may also choose to give your opinions via a written email or document.

4. ماذا يترتب على مشاركتي؟

إذا كنت توافق على المشاركة، سوف أتصل بك لترتيب موعد مناسب للمقابلة. في المقابلة، سوف نناقش المسائل الراهنة للتعليم الصيدلي في الأردن اعتمادا على دورك في المهنة، بهدف السعي لتحقيق أهداف البحث. لك كامل الحرية في مناقشة أي قضايا أخرى تراها مهمة في الموضوع أو عدم الإجابة على أي سؤال لا تريد مناقشته.

المقابلة النموذجية تستمر بين حوالي 1 و 1.5 ساعة، ولكن إذا كانت هناك حاجة إلى أي وقت أقل أو أكثر ستكون على علم بذلك. إذا كنت بحاجة إلى إلغاء أو إعادة جدولة المقابلة لأي سبب من الأسباب، لا تقلق. كل ما عليك القيام به هو ابلاغي وسوف يتم ترتيب وقتا أكثر ملاءمة. إذا كانت المقابلة وجها لوجه ليس ممكنة يمكننا إجراء مقابلة عبر الهاتف. بدلا من ذلك، يمكنك أيضا اختيار إعطاء آرائك عبر البريد الإلكتروني أو وثيقة مكتوبة.

5. What will happen to the information collected?

With your permission, your interview will be audio recorded and direct quotes may be used in any publication or report resulting from this study. You are free to conduct the interview in Arabic or English. Both Arabic and English versions of this sheet are available should you need both. All information collected about you during the course of this research will remain confidential. All identifying information about you will be removed when/if referring to the information. Only your position will be referred to and if you're an official person holding a special

position, readers may recognize you. All information will be stored securely on password protected computers and/or in locked drawers/filing cabinets at the University of Nottingham for 7 years after completion of the study. Only members of the research team will have access to the information.

5. ماذا سيحدث للمعلومات التي يتم جمعها؟

بعد إذنكم، سوف تكون المقابلة مسجلة صوتيا وقد تستخدم بعض الاقتباسات المباشرة في أي مطبوعة أو تقرير ناتج من هذه الدراسة. لك كامل الحرية لإجراء المقابلة الشخصية باللغة العربية أو الإنجليزية. المعلومات في هذه الوثيقة متوفرة باللغة العربية والإنجليزية. جميع المعلومات التي يتم جمعها عنك أثناء هذا البحث ستبقى سرية. ستتم إزالة كافة المعلومات تعريفية عنك في حالة الإشارة الى المعلومات. سيتم الإشارة إلى منصبك فقط، وإذا كنت شخص مسؤول ذو منصب خاص، قد يتم التعرف عليك من قبل القراء. سيتم تخزين جميع المعلومات بشكل آمن على أجهزة كمبيوتر تابعة للجامعة ومحمية بكلمة سر أو في خزائن لحفظ الملفات في جامعة نوتنغهام لمدة 7 سنوات من بعد الانتهاء من الدراسة. سوف يتم السماح لأعضاء فريق البحث فقط من الوصول إلى المعلومات.

6. What happens if I agree to take part in the study?

After reading and understanding this sheet, you will be asked to sign a consent form. A copy of both documents will be kept by you and another by the research team and a date for the interview will be arranged.

6. ماذا يحدث إذا وافقت على المشاركة في الدراسة؟

بعد قراءة وفهم هذه الوثيقة، سوف يطلب منك التوقيع على استمارة الموافقة وستحتفظ بنسخة من كل الوثائق كما وسيحتفظ فريق البحث بنسخة أخرى وسيتم ترتيب موعد المقابلة.

7. What happens if I do not wish to participate?

If, for any reason, you do not wish to participate in this study, that is absolutely fine. If you change your mind and wish to participate after all, all you need to do is contact me.

7. ماذا إذا كنت لا أرغب في المشاركة؟

إذا، لأي سبب من الأسباب، كنت لا ترغب في المشاركة في هذه الدراسة فلا إشكال في ذلك. إذا غيرت رأيك ورغبت في المشاركة فيما بعد ، كل ما عليك القيام به هو الاتصال بي.

8. Are there any benefits or risks involved in my participation?

Your participation may greatly inform the research team and potentially the community on pharmacy education development. With regards to any risks involved in taking part in this study, we believe those to be minimal.

8. هل هناك أي فوائد أومخاطر التي تنطوي عليها مشاركتي؟

مشاركتكم قد تساعد إلى حد كبير فريق البحث ويحتمل أن تكون ذات فائدة للمجتمع من خلال تطوير التعليم الصيدلي. فيما يتعلق بأي مخاطر التي تنطوي عليها المشاركة في هذه الدراسة، نحن نعتقد تكون ضئيلة للغاية.

9. What happens if I want to withdraw?

If after the interview has been conducted you wish to withdraw from the study, that is also absolutely fine. All you need to do is contact me within 2 months of the interview date. The reason for the 2 months is to prevent a situation where you want to withdraw after the information from your interview may have already been analysed and published.

9. ماذا يحدث إذا أردت الانسحاب؟

إذا بعد أن تم إجراء المقابلة كنت ترغب في الانسحاب من الدراسة، فلا إشكال في ذلك. كل ما عليك القيام به هو الاتصال بي في غضون شهرين من تاريخ المقابلة. والسبب في الشهرين هو لمنع حالة الانسحاب بعد قد تم بالفعل تحليل المعلومات من المقابلة ونشرها.

10. Who should I contact for further information?

If you need further information, or have any queries or concerns regarding any aspect of this study, please do not hesitate to contact us. In the event that any concerns are unresolved and you wish to make a formal complaint, please contact the School of Education Research Ethics Coordinator at educationresearchethics@nottingham.ac.uk.

10. كيف أستطيع الحصول على مزيد من المعلومات؟

اذا كنت بحاجة الى مزيد من المعلومات أو لديك أي استفسارات أو شواغل بشأن أي جانب من جوانب هذه الدراسة، لا تترددوا في الاتصال بنا. في حال عدم تمكن حل أي من الشواغل أو الرغبة في تقديم شكوى رسمية، يرجى التواصل مع منسق لجنة الأخلاقيات بكلية التعليم على:

educationresearchethics@nottingham.ac.uk

Researcher:

Lina R. Bader

Tel: +962 7988 2324 6/+44 115 82 32317

Email: paxlb1@nottingham.ac.uk

Supervisors:

Prof Claire Anderson

Tel: +44 (0)11 595 15389

Email: claire.anderson@nottingham.ac.uk

Prof Simon McGrath

Tel: +44 (0)11 595 14508

Email: simon.mcgrath@nottingham.ac.uk

Appendix 8 Interview Consent Form

Participant identification number:

PARTICIPANT CONSENT FORM

Project Title: Evaluating Graduates' Fitness for Practice- A Study on Pharmacy Education in Jordan

08/10/2013 Version 3.0

Researcher's Name: Lina R. Bader
Supervisors' Name: Claire Anderson; Simon McGrath

RESEARCHER COPY

1. I have read the Participant Information Sheet date 08/10/2013 (Version 3.0) and the nature and purpose of the research project has been explained to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that I may withdraw from the research project within ***two months*** of my participation date and that this will not affect my status now or in the future.
3. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
4. I understand that I will be audio-taped during the interview. I also give consent that notes may be taken by the researcher during the interview.
5. I understand that all collected data in the forms of electronic copies of the transcripts and hard copies of the notes will be: kept confidential, stored securely at The University of

Nottingham, used for the purposes identified and only accessed by the researcher and her supervisors.

6. I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.

7. I understand that relevant data collected during the study may be looked at by individuals from regulatory authorities (i.e. for University auditing purposes) where it is relevant to my taking part in this research.

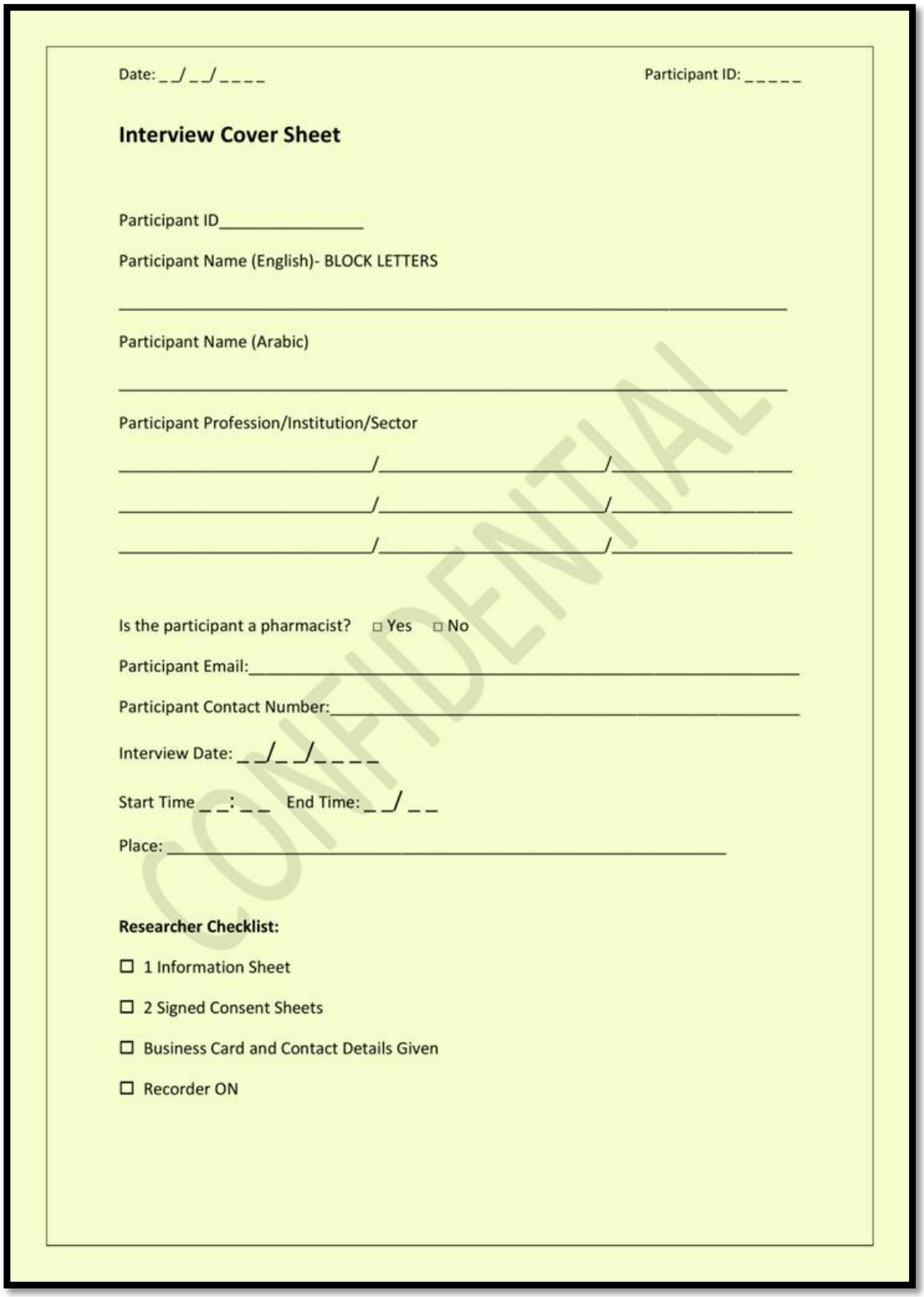
8. I agree to take part in this study.

	Name	Date	Signature
Participant			
Researcher			

When completed, one copy to be given to participant and one retained by the researcher.

RESEARCHER COPY

Appendix 9 Interview Cover Sheet



Date: _ _/ _ _/ _ _ _ _ Participant ID: _ _ _ _ _

Interview Cover Sheet

Participant ID_____

Participant Name (English)- BLOCK LETTERS

_____

Participant Name (Arabic)

_____

Participant Profession/Institution/Sector

_____/_____/_____

_____/_____/_____

_____/_____/_____

Is the participant a pharmacist? □ Yes □ No

Participant Email:_____

Participant Contact Number:_____

Interview Date: _ _/_ _/_ _ _ _

Start Time _ _: _ _ End Time: _ _/ _ _

Place: _____

Researcher Checklist:

☐ 1 Information Sheet

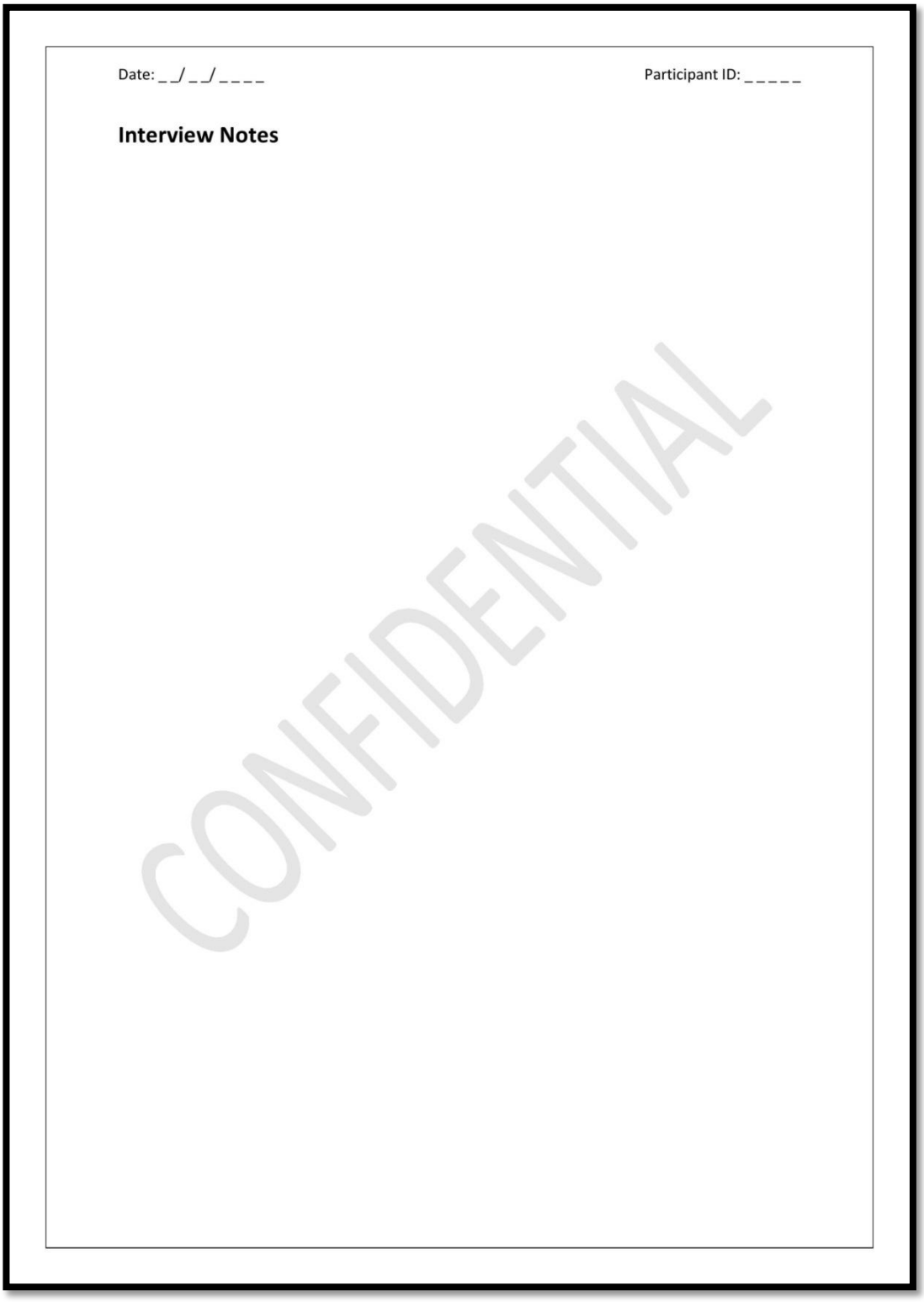
☐ 2 Signed Consent Sheets

☐ Business Card and Contact Details Given

☐ Recorder ON

CONFIDENTIAL

Appendix 10 Interview Notes Sheet

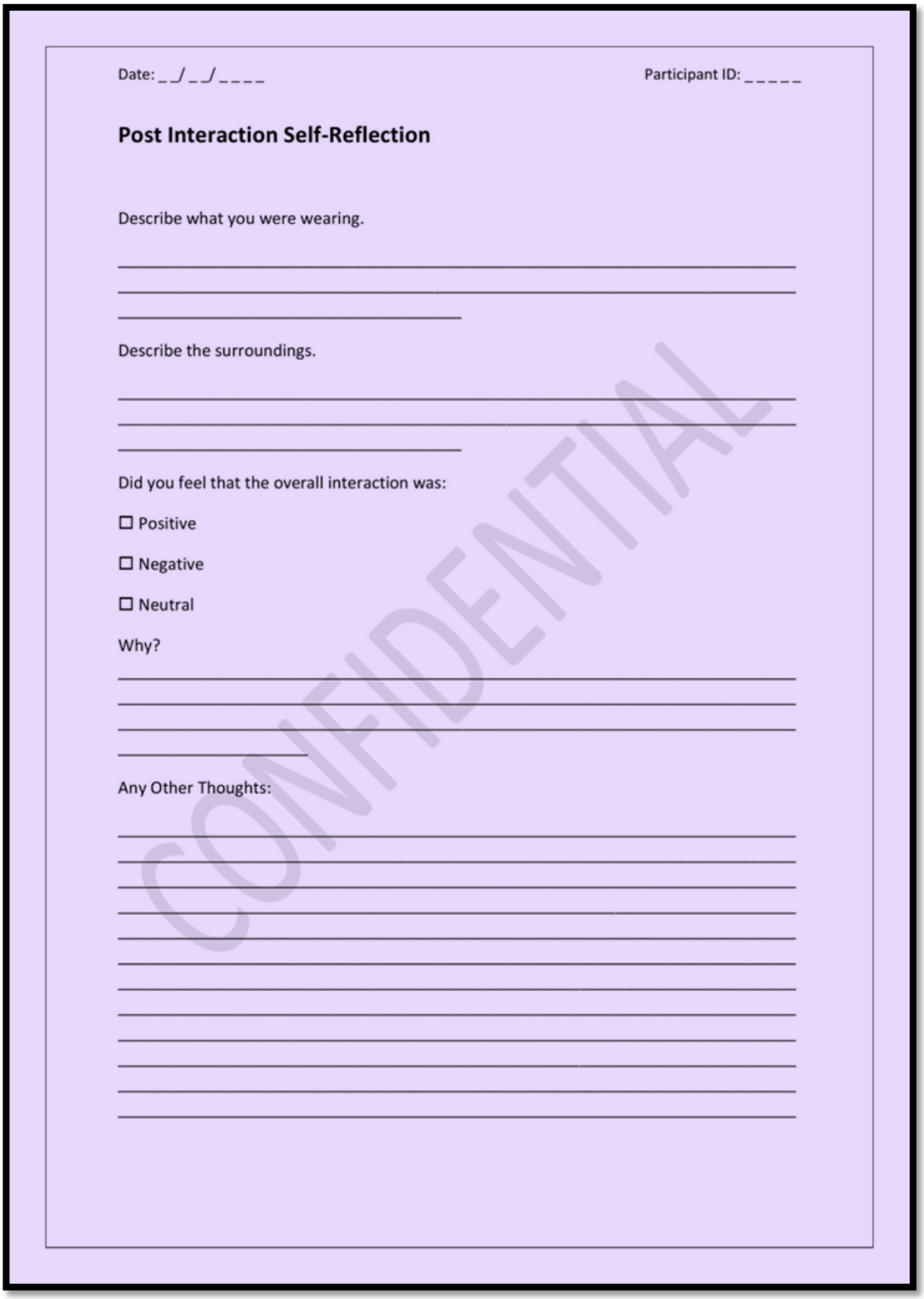


Date: _ _/ _ _/ _ _ _ _ Participant ID: _ _ _ _ _

Interview Notes

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Appendix 11 Post-interaction Self-reflection Form



Date: _ _/ _ _/ _ _ _ _ Participant ID: _ _ _ _ _

Post Interaction Self-Reflection

Describe what you were wearing.

Describe the surroundings.

Did you feel that the overall interaction was:

☐ Positive

☐ Negative

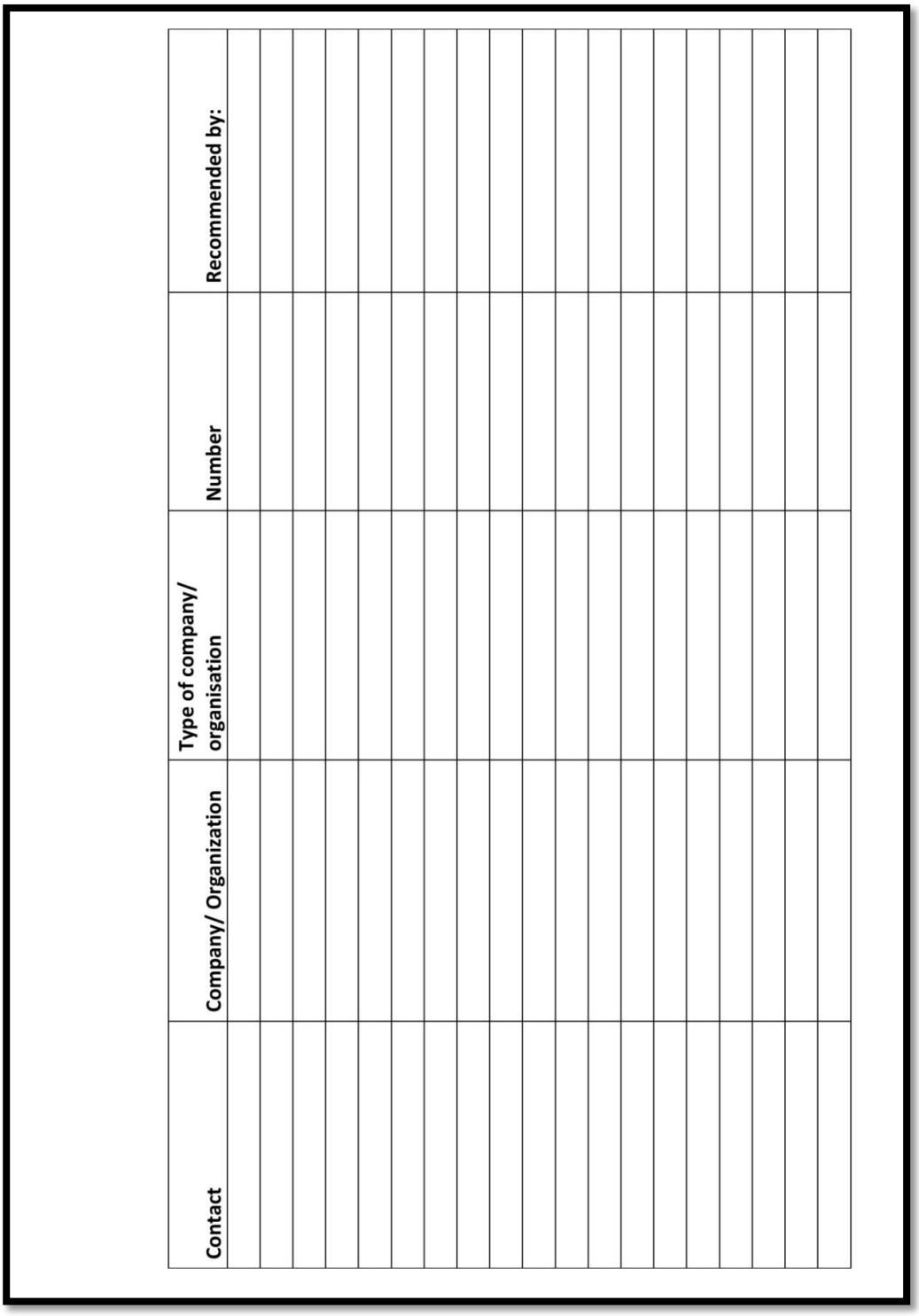
☐ Neutral

Why?

Any Other Thoughts:

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Appendix 12 Potential Participants List

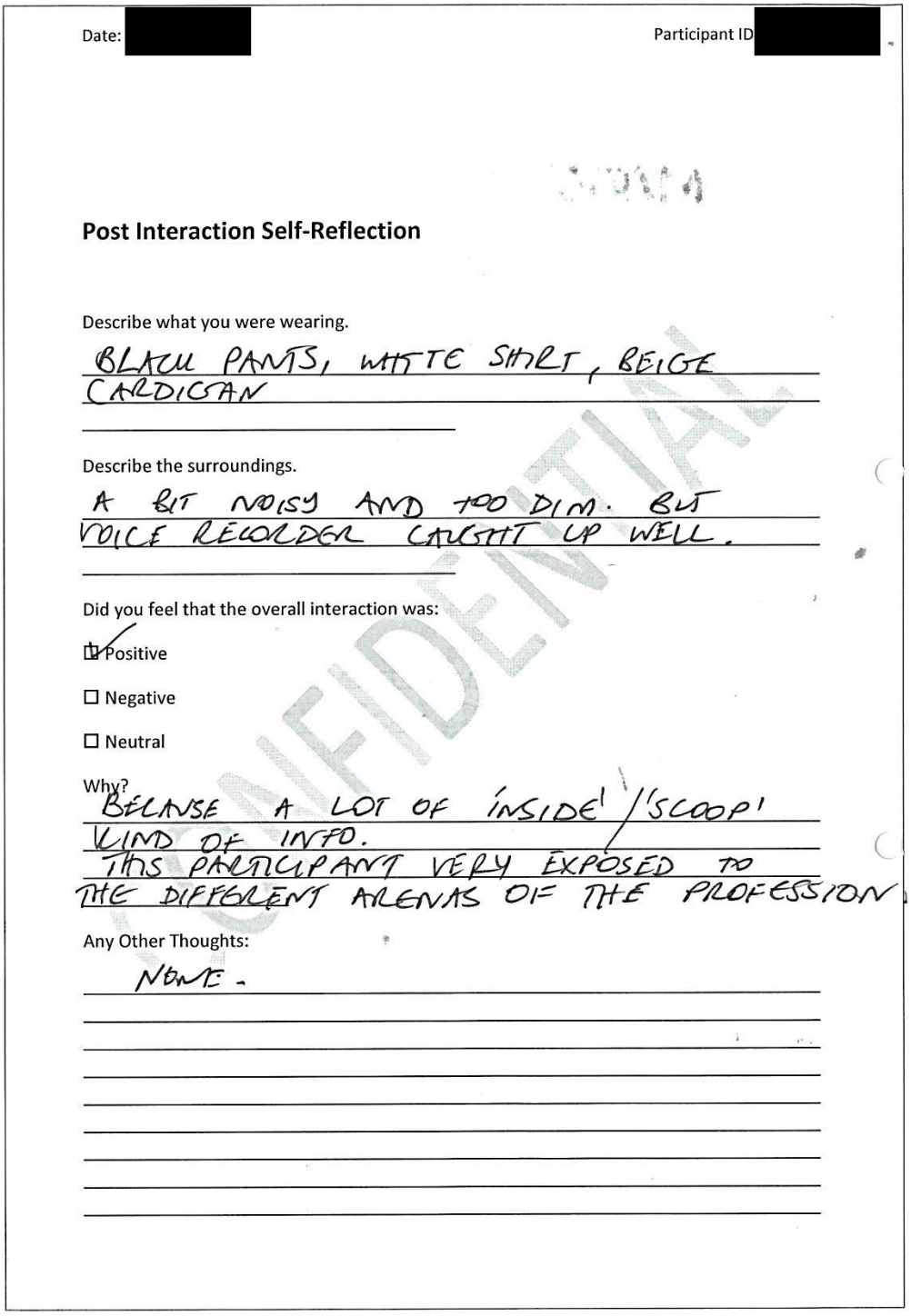


Contact	Company/ Organization	Type of company/ organisation	Number	Recommended by:

Appendix 13 Participant Top Sheet

Participant ID: _____			
Participant Top Sheet			
Activity	**Date activity undertaken**	**Details entered on Excel**	**Please note any additional details**
1. Interview conducted			
2. Consent form signed and filed			
3. Participant cover sheet info filled			
4. Post-interaction self-reflection form filled			
5. Recommended contacts saved to participant lists			
6. Recording uploaded			
7. Recording sent to transcriber			
8. Interview transcribed			
9. Transcription checked			
10. Transcription translated			
11. Translation cut down			
12. Translation sent to certified translator			
13. Translation certified and attached			
14. Text analysed			

Appendix 14 Positive Interaction Example



Date: [redacted] Participant ID [redacted]

Post Interaction Self-Reflection

Describe what you were wearing.

BLACK PANTS, WHITE SHIRT, BEIGE CARDIGAN

Describe the surroundings.

A BIT NOISY AND TOO DIM. BUT VOICE RECORDER CAUGHT UP WELL.

Did you feel that the overall interaction was:

☑ Positive

☐ Negative

☐ Neutral

Why?

BECAUSE A LOT OF 'INSIDE'/'SCOOP' KIND OF INFO. THIS PARTICIPANT VERY EXPOSED TO THE DIFFERENT ARENAS OF THE PROFESSION

Any Other Thoughts:

NONE.

CONFIDENTIAL

Appendix 15 Negative Interaction Example

Date: [redacted] Participant ID: [redacted]

Post Interaction Self-Reflection

Describe what you were wearing.

JEANS, BEIGE CARDIGAN

Describe the surroundings.

BUSY SHARED SPACE.

Did you feel that the overall interaction was:

☐ Positive

☑ Negative

☐ Neutral

Why?

I WAS SOLT OF PUSHED TO DO THE INTERVIEW ON THE SPOT. PARTICIPANT REFUSED TO BE RECORDED YET INSISTED ON CONDUCTING IT.

Any Other Thoughts:

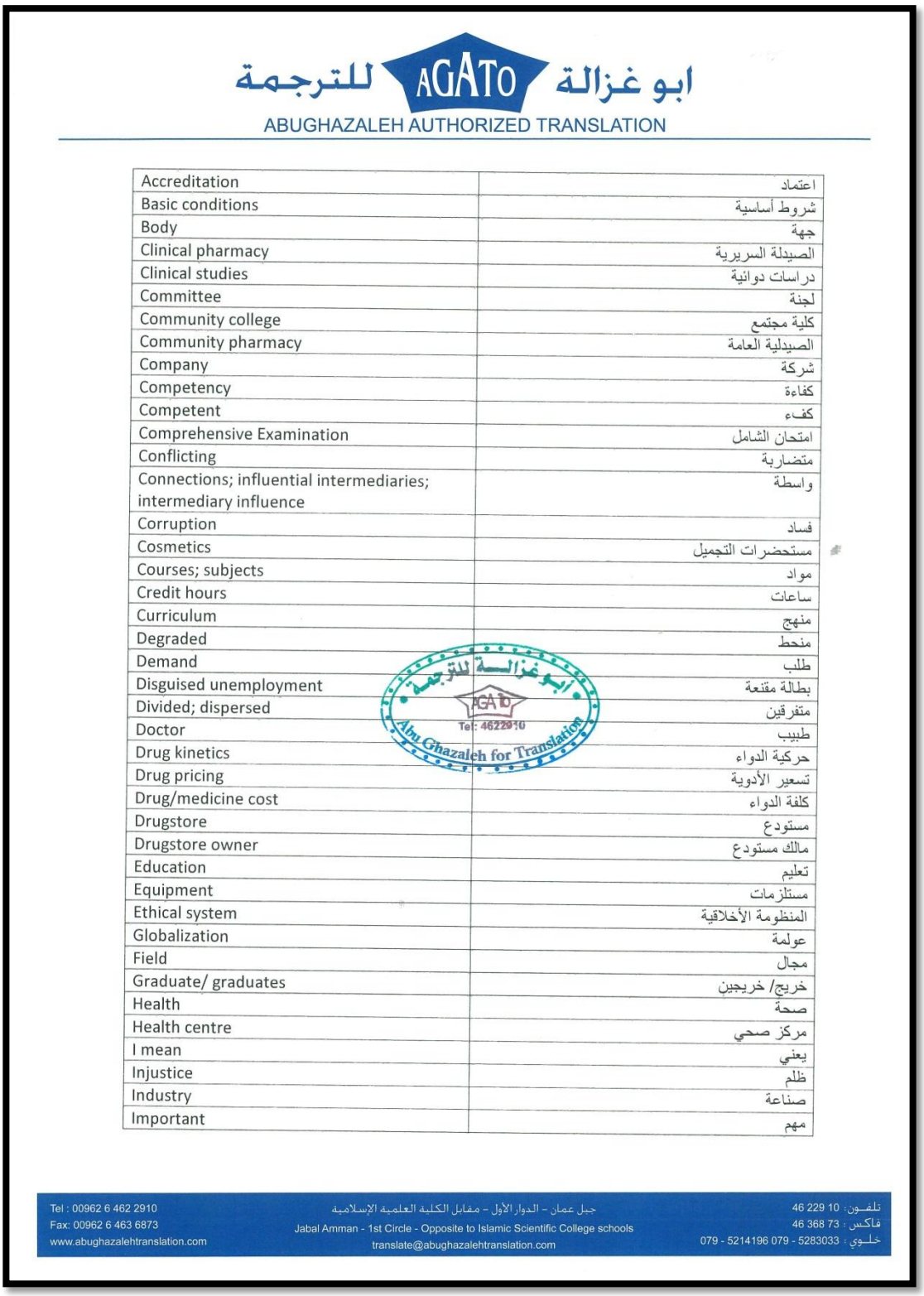
SO THAT WASN'T A GOOD START. EVEN THOUGH I EXPLAINED THE CONFIDENTIALITY THAT COMES WITH RECORDING.

SHE BEGAN THE ANSWERS SLOWLY AT FIRST BUT THEN SPOKE AT A NORMAL PACE + SO I WASN'T ABLE TO CATCH UP WITH TAKING NOTES.

I WASN'T FEELING COMFORTABLE SO DID NOT ASK AS MANY QUESTIONS AS USUAL.

FRUITLESS.

Appendix 16 Certified Translation Glossary



ابو غزالة للترجمة AGATO
ABUGHAZALEH AUTHORIZED TRANSLATION

Accreditation	اعتماد
Basic conditions	شروط أساسية
Body	جهة
Clinical pharmacy	الصيدلة السريرية
Clinical studies	دراسات دوائية
Committee	لجنة
Community college	كلية مجتمع
Community pharmacy	الصيدلية العامة
Company	شركة
Competency	كفاءة
Competent	كفء
Comprehensive Examination	امتحان الشامل
Conflicting	متضاربة
Connections; influential intermediaries; intermediary influence	واسطة
Corruption	فساد
Cosmetics	مستحضرات التجميل
Courses; subjects	مواد
Credit hours	ساعات
Curriculum	منهج
Degraded	منحط
Demand	طلب
Disguised unemployment	بطالة مقنعة
Divided; dispersed	متفرقين
Doctor	طبيب
Drug kinetics	حركية الدواء
Drug pricing	تسعير الأدوية
Drug/medicine cost	كلفة الدواء
Drugstore	مستودع
Drugstore owner	مالك مستودع
Education	تعليم
Equipment	مستلزمات
Ethical system	المنظومة الأخلاقية
Globalization	عولمة
Field	مجال
Graduate/ graduates	خريج/ خريجين
Health	صحة
Health centre	مركز صحي
I mean	يعني
Injustice	ظلم
Industry	صناعة
Important	مهم

ابو غزالة للترجمة AGATO Tel: 4622910 Abu Ghazaleh for Translation

Tel : 00962 6 462 2910
Fax: 00962 6 463 6873
www.abughazalehtranslation.com

جبل عمان - الدوار الأول - مقابل الكلية العلمية الإسلامية
Jabal Amman - 1st Circle - Opposite to Islamic Scientific College schools
translate@abughazalehtranslation.com

تلفون: 10 229 46
فاكس: 73 368 46
خلوي: 079 - 5214196 079 - 5283033

Instructionally prompting	تلقين
Job description	وصف وظيفي
Joint committee	لجنة مشتركة
Jordan Food and Drug Administration (JFDA)	المؤسسة العامة للغذاء والدواء
JPA	النقابة
Knowledge	معرفة
Law	قانون
Manufacturing sites	مواقع التصنيع
Marginalization	تهميش
Medical	طبي
Medicinal sciences	علوم الأدوية
Memorize	يحفظ
Minerals	معادن
Ministry	وزارة
Ministry of Health (MoH)	وزارة الصحة
Minority Groups	حقوقالاقليات
Natural plants	نباتات طبيعية
Natural products	نواتج طبيعية
Organized; orderly	منظم/ منظمة
Patient	مريض
Pension	راتب تقاعدي
Personal interests; interests	مصالح
Pharmacist/ pharmacists	صيدلاني/ صيدلي/ صيادلة
Pharmaceutical form	الشكل الصيدلاني
Pharmaceutical sciences	علوم صيدلانية
Pharmacoeconomics	الإقتصاد الدوائي
Pharmacy	صيدلة
Pharmacy Assistant	مساعد صيدلي
Politics	سياسة
Practical	عملي
Practice	ممارسة
Private	خاص
Profession	مهنة
Programme	برنامج
Problem	مشكلة
Assistant Bridging Programme	برنامج التجسير
Precautions	محاذير
Price hikes	ارتفاع الاسعار
Professional associations	نقابات مهنية
Promotion	ترفيع
Prompting and recitation	تلقين وتسميع
Public body	هيئة عامة

ابو غزالة للترجمة AGATO Tel: 4622910 Abu Ghazaleh for Translation

Purchases	مشتريات
Quality	مستوى/ نوعية
Registration	ترخيص
Regulation	مراقبة
Rehabilitation	إعادة تأهيل
Responsible pharmacist	الصيدلي المسؤول
Role; function	دور
Salary	راتب
School (pharmacy)	كلية (صيدلة)
Sector	قطاع
Side effects	تأثيرات جانبية
Skill	مهارة
Standards	معايير
State administration	ادارة الدولة
Student	طالب
Syllabus	خطة دراسية
Tawjihi – general secondary examination	توجيهي- امتحان الثانوية العامة
Training	تدريب
Transgressions	تجاوزات
Tribalism	عشائرية
Unified Admission Unit	وحدةالقبولالموحد
University/ universities	جامعة/ جامعات
Vitamins	فيتامينات
Vulnerable Groups	المستضعفين

ابو غزالة للترجمة AGATO Tel: 4622910 Abu Ghazaleh for Translation

Appendix 17 Transcriber Confidentiality Agreement

Confidentiality Agreement

1. This confidentiality agreement is made by Anas Bader and Lina Bader for the transcription underdone by Anas Bader for Lina Bader's PhD research project.
2. It dictates that all text drafted, content of recordings, and any work product by Anas Bader remain confidential indefinitely.
3. Compensation for the work is set at 10 Jordanian Dinars per transcribed interview.

	Name	Date	Signature
Transcriber	Anas Bader	30/11/2013	
Researcher	L. BADER	30/11/2013	

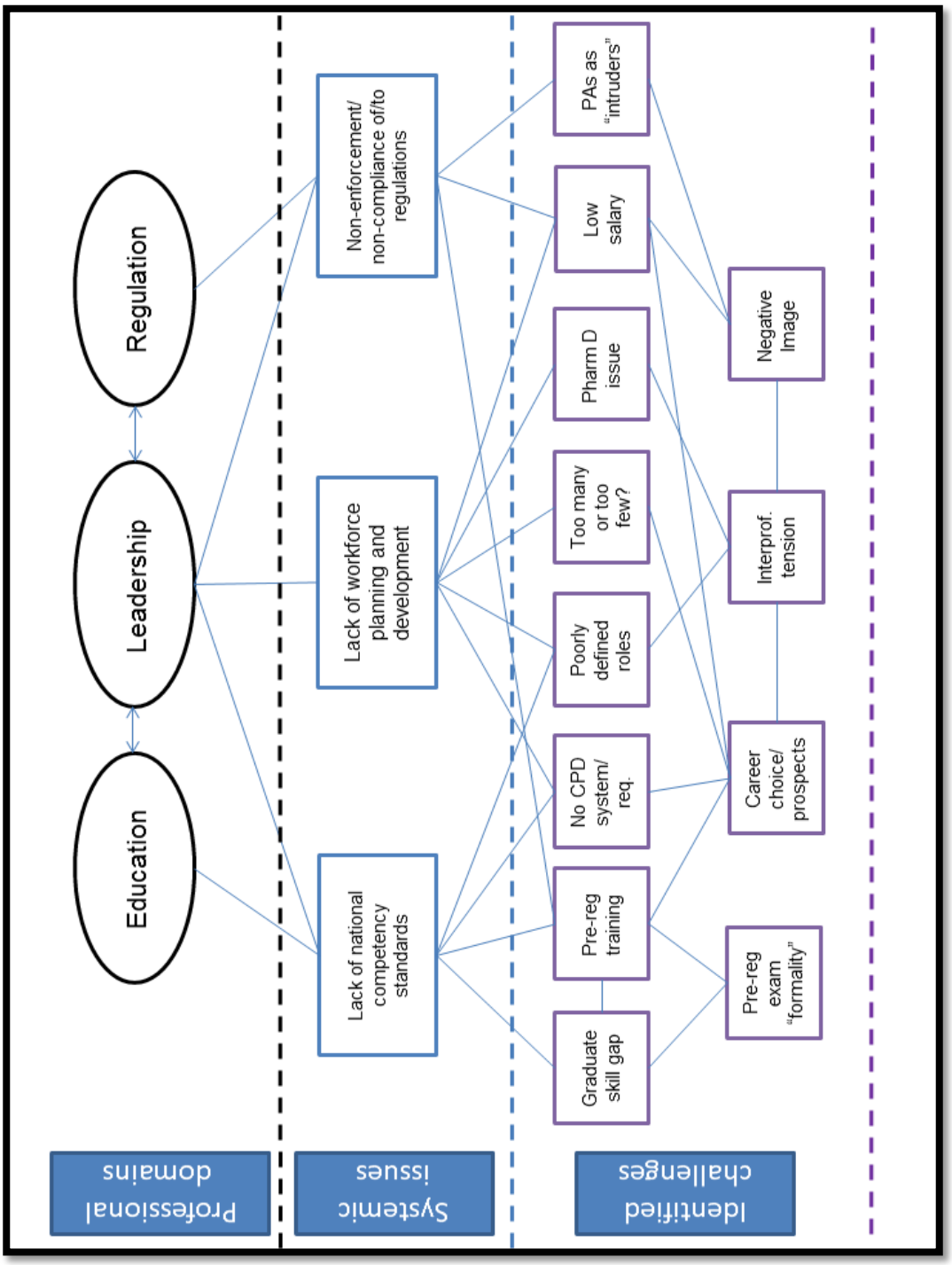
Appendix 18 Back-translator Confidentiality Agreement

Confidentiality Agreement

1. This confidentiality agreement is made by Saja Al Nahar and Lina Bader for the back-translation underdone by Saja Al Nahar for Lina Bader's PhD research project.
2. It dictates that all text, content of transcripts, and any work product by Saja Al Nahar remain confidential indefinitely.
3. Compensation for the work was set at 10 British Pounds per back-translated interview.

	Name	Date	Signature
Back-translator	Saja Al Nahar	22 Mar 2015	
Researcher	Lina Bader	22/03/2015	

Appendix 19 Study I Thematic Analysis Map



Appendix 20 Study I Ethics Query on Reporting Results to Participants

Gmail

Lina R. Bader <lina.r.bader@gmail.com>

Ethical Query Regarding Reporting Results to Study Participants

6 messages

Lina R. Bader <lina.r.bader@gmail.com> Sun, Apr 5, 2015 at 9:36 PM
To: educationresearchethics@nottingham.ac.uk

To whom it may concern,

My name is Lina and I am a third year PhD student (School of Education and School of Pharmacy) in the final stages of analysis. I have completed my data collection last year; that included interviewing 53 participants in Jordan to inform a study on developing their pharmacy education.

My supervisors and I believe that it is important to report our results and study recommendations to the participants whom i have already interviewed.

The results may impact national policy and we strongly believe that involving the participants once more by reporting our results and recommendations to them will further corroborate the study's final conclusions and strengthen the research's overall quality.

I have received ethical approval from the School of Education about two years ago. Please see the attached documents for reference.

I am now in my field of data collection again (Jordan) for a limited time and am aiming to conduct focus groups with the study's participants. I will invite the participants to attend focus groups of 8-10 lasting 60-90 minutes to discuss the results of their former interviews.

I am emailing you to inquire whether any amendments to the original applications form is required for this or if no changes are necessary.

I would really appreciate your swift reply to my query.

Many thanks in advance for your time.

Lina

2 attachments

BaderL Ethics Approval Form.pdf
143K

Ethical Clearance Application_LinaBader.pdf
262K

educationresearchethics <educationresearchethics@nottingham.ac.uk> Tue, Apr 14, 2015 at 9:59 AM
To: "Lina R. Bader" <lina.r.bader@gmail.com>

Dear Lina,

Thanks for this and apologies for the delay as I have been off sick.

I will forward this to someone on the Committee to see what their advice is. I hope to be in touch with you shortly.

Best wishes,

Louise

Research Office

From: Lina R. Bader [mailto:lina.r.bader@gmail.com]
Sent: 05 April 2015 21:36
To: educationresearchethics@nottingham.ac.uk
Subject: Ethical Query Regarding Reporting Results to Study Participants

[Quoted text hidden]

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educationresearchethics <educationresearchethics@nottingham.ac.uk> Tue, Apr 14, 2015 at 2:45 PM
To: "Lina R. Bader" <lina.r.bader@gmail.com>

Dear Lina,

Please see message below from Mary Oliver who reviews PGR Ethics. No need for a resubmission.

Good luck with your research.

Best wishes,

Louise

Research Office

++
++

thank you for sending me this query.

I don't think that we need to have another application if what the student proposes to do is to go back to the participants with their data. This is in keeping with best practice when interviewing for research purposes.

Good luck with the reporting and interviewing with the focus groups.

best wishes,

Mary

Mary Oliver
Associate Professor in Science Education
The University of Nottingham
School of Education (room B18)
Jubilee Campus
Wollaton Road
Nottingham NG8 1BB

t: +44 (0)115 7484791
e: mary.oliver@nottingham.ac.uk
w: http://www.nottingham.ac.uk/education

From: Lina R. Bader [mailto:lina.r.bader@gmail.com]
Sent: 05 April 2015 21:36
To: educationresearchethics@nottingham.ac.uk
Subject: Ethical Query Regarding Reporting Results to Study Participants

To whom it may concern,

[Quoted text hidden]

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Appendix 21 Study I Focus Group Invitation Email

Dear Participant,

It has been more than a year ago since we met over an interview that you kindly agreed to participate in to help me with my PhD research project at the University of Nottingham.

Since then, your interview and the rest of the 52 participants' interviews have been analysed. Some of the main challenges facing the pharmacy profession in Jordan have been identified alongside key recommendations aimed at developing the profession.

As this study and its results may be of potential impact on policymaker decisions on a national level, **I would like to report those findings back to you and gain the opportunity to benefit from your input once again.** This will be an invaluable chance for me to discuss the findings and allow you to reflect on and evaluate them before they are finalised for public sharing.

I have arranged for a short visit to Amman specifically for this reason and would like to kindly invite you to participate in a focus group this Saturday the 2nd of May, 2015. A series of focus groups will be run on the day so you can choose the time that best suits you: 10:00, 12:00, 14:00 or 16:00. The focus group will last between 60 to 90 minutes and will take place in Professional Effective Solutions Office, 5th Floor, Building No. 74 (Zepter International), Mecca Street (please see attached a map for directions and a Google Maps link here).

Your attendance is of utmost importance to me and the rest of the research team at the University of Nottingham and so we would really hope that you can make it. Your participation one last time will be invaluable to the final quality and conclusions of this study. I apologise in advance if the day is unsuitable for you but I am unfortunately bound to do it on this day as my time here is very limited and I thought that a weekend is freer than a weekday for most.

To confirm your attendance, please email me back with your preferred session time or call me on 07999823246. In the unfortunate event that you cannot make it, I would appreciate it if you could let me know as well.

Thank you in advance for your time and I look forward to hearing from you as soon as possible.

Kindest regards,

Lina Bader

(Sent on 26/04/2015)

Appendix 22 Study I Focus Group Guide

Opening question	1. I'd like to start by briefly telling you what we did with your interviews and how we used them to identify 8 challenges the research team believes to be facing the pharmacy profession in Jordan and negatively impacting on its overall advancement.
Validation phase questions	2. I want to discuss with you the validity of our findings. We've asked you to come today so you can help us. Your participation is vital to the final conclusions of the study and I would like your full input. We are especially keen on hearing any opposing views or constructive criticisms which will only help us to further refine the results and improve the study. 3. What do you think of challenge X? Do you think it's true? Does it accurately reflect the situation? 4. Do you think it *doesn't* represent the situation? How? Do you disagree with it? Why? 5. Do you perceive X as a challenge facing the pharmacy profession in Jordan? Do you think that this challenge is affecting the overall advancement of the profession? How? If this challenge is addressed, do you think the profession would be in a better state? 6. Do you think there are other major challenges that are not described by this list?
Transition question	7. Now that we've validated the challenges, I would like to tell you about a conceptual framework that we can use to help us better understand each challenge and discuss ways of addressing it.
Mapping phase questions	8. On the piece of paper with an illustration of the framework in front of you, please take as much time as you need to assign each of the 8 challenges to the axis you perceive to be the main cause of the challenge. More than one may apply, but please try to assign it to what you perceive to be the primary one. 9. Regarding challenge X, who perceived the challenge to be related to a disconnect between education-regulation? Regulation-practice? Practice-education? Why? 10. Do you all agree that challenge X is primarily related to disconnect Y? If not, why? 11. The research team initially assigned challenge X to disconnect Y-Y because they thought the reason is Z. What do you think of their interpretation? 12. How do you think challenge X can be addressed? What solutions do you perceive to be appropriate? What recommendations do you have?
Ending questions	13. We hope to publish the final results of this study. Do you think the results may have an impact on pharmacy in Jordan? Do you think you or other stakeholders would use this information? 14. Finally, is there anything else you would like to say?

Appendix 23 Focus Group Consent Form

Participant identification number: _____

FOCUS GROUP CONSENT FORM
Final Version 1.0 30/04/2015

Original Project Title: Evaluating Graduates' Fitness for Practice-
A Study on Pharmacy Education in Jordan

1. I understand that the main researcher re-contacted me and invited me to a focus group to discuss some of the findings of a study I have already participated in through an interview.
2. The nature and purposes of this focus group have been explained to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
3. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
4. I understand that I will be audio-taped during the focus group. I also give consent that notes may be taken by the researcher during it.
5. I understand that all collected data in the forms of electronic copies of the transcripts and hard copies of the notes will be: kept confidential, stored securely at The University of Nottingham, used for the purposes identified and only accessed by the researcher and her supervisors.
6. I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.

7. I understand that relevant data collected during the study may be looked at by individuals from regulatory authorities (i.e. for University auditing purposes) where it is relevant to my taking part in this research.

8. I agree to take part in this study.

.....	.....	.....
Participant Name	Date	Signature
.....	.....	.....
Researcher Name	Date	Signature

When completed, one copy to be given to participant and one retained by the researcher.

Researcher:

Lina R. Bader

Tel: +44 (0)115 82 32317

Email: paxlb1@nottingham.ac.uk

Main Supervisor:

Prof Claire Anderson

Tel: +44 (0)11 595 15389

Email: claire.anderson@nottingham.ac.uk

Ethics coordinator:

educationresearchethics@nottingham.ac.uk

Appendix 24 Focus Group Presentation

Global Top 100 University

The University of Nottingham

Advancing the pharmacy profession in Jordan: challenges and opportunities

Lina R. Bader

Division of Social Research in Medicines and Health

Global Top 100 University

The University of Nottingham

Since we last met..

- Translated your interviews
- Analysed the transcripts
- Identified 8 main challenges
- Tried to 'diagnose them'
- Drafted some recommendations

Global Top 100 University

The University of Nottingham

Aim of this focus group..

- To share and discuss the main results with you, my participants.
- To give you a chance to 'diagnose' the problems yourself and compare with my own analysis.
- To help me present higher quality findings to the global and local public e.g. policymakers.

Global Top 100 University

The University of Nottingham

8 main challenges

(1) Lack of workforce planning: uncontrolled academic growth, pharmacy schools, student numbers, effect on workforce employment?



Global Top 100 University

The University of Nottingham

(2) Unregulated pre-registration requirements: student training often forged; JPA examination 'too simple' and just a 'formality'



Global Top 100 University

The University of Nottingham

(3) Higher education accreditation mishaps: Bridging Programme; public vs. private schools quality assurance



1

Global Top 100 University

(4) Unprepared graduates: cross-sector skill gap; mismatch with practice requirements



Global Top 100 University

(5) Missing continuing professional development: no CPD requirements; no license revalidation system; once licensed, always licensed



Global Top 100 University

(6) Out of place Pharm. D: limited job market; graduate surplus; competing for regular pharmacy jobs



Global Top 100 University

(7) Unmet basic salaries: minimum pharmacist salary too low; often unpaid



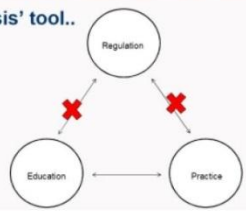
Global Top 100 University

(8) Dispensing pharmacy assistants: illegal practice; overstepping pharmacist role; public health and safety



Global Top 100 University

'Diagnosis' tool..



2

Global Top 100 University

The University of Nottingham

(1) **Lack of workforce planning:** uncontrolled academic growth, pharmacy schools, student numbers, effect on workforce employment?

(2) **Unregulated pre-registration requirements:** student training often forged; JPA examination 'too simple' and just a 'formality'

(3) **Higher education accreditation mishaps:** Bridging Programme; public vs. private schools quality assurance

(4) **Unprepared graduates:** cross-sector skill gap; mismatch with practice requirements

(5) **Missing continuing professional development:** no CPD requirements; no license revalidation system; once licensed, always licensed

(6) **Out of place Pharm. D:** limited job market; graduate surplus; competing for regular pharmacy jobs

(7) **Unmet basic salaries:** minimum pharmacist salary too low; often unpaid

(8) **Dispensing pharmacy assistants:** illegal practice; overstepping pharmacist role; public health and safety

Global Top 100 University

The University of Nottingham

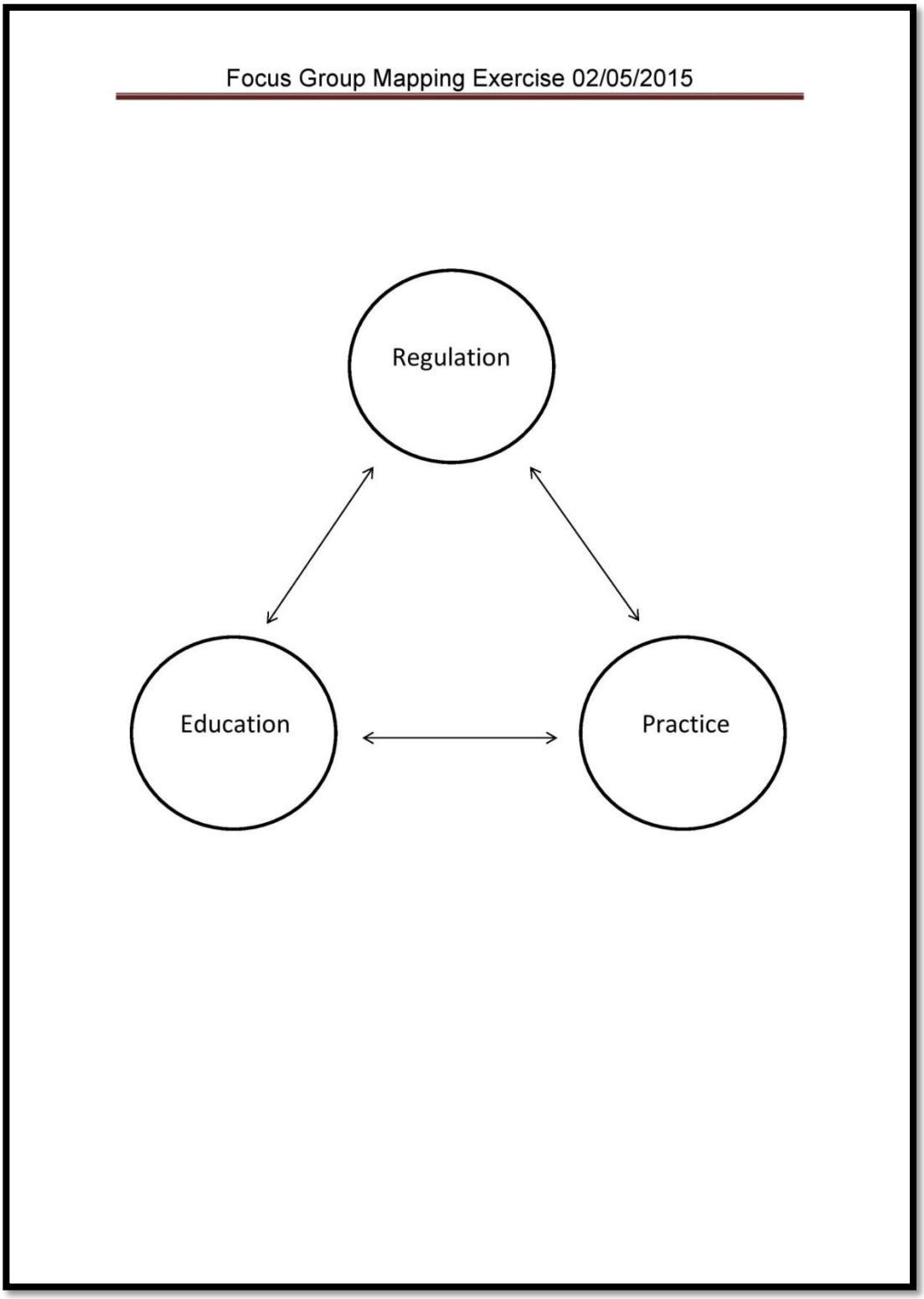
Thank you!



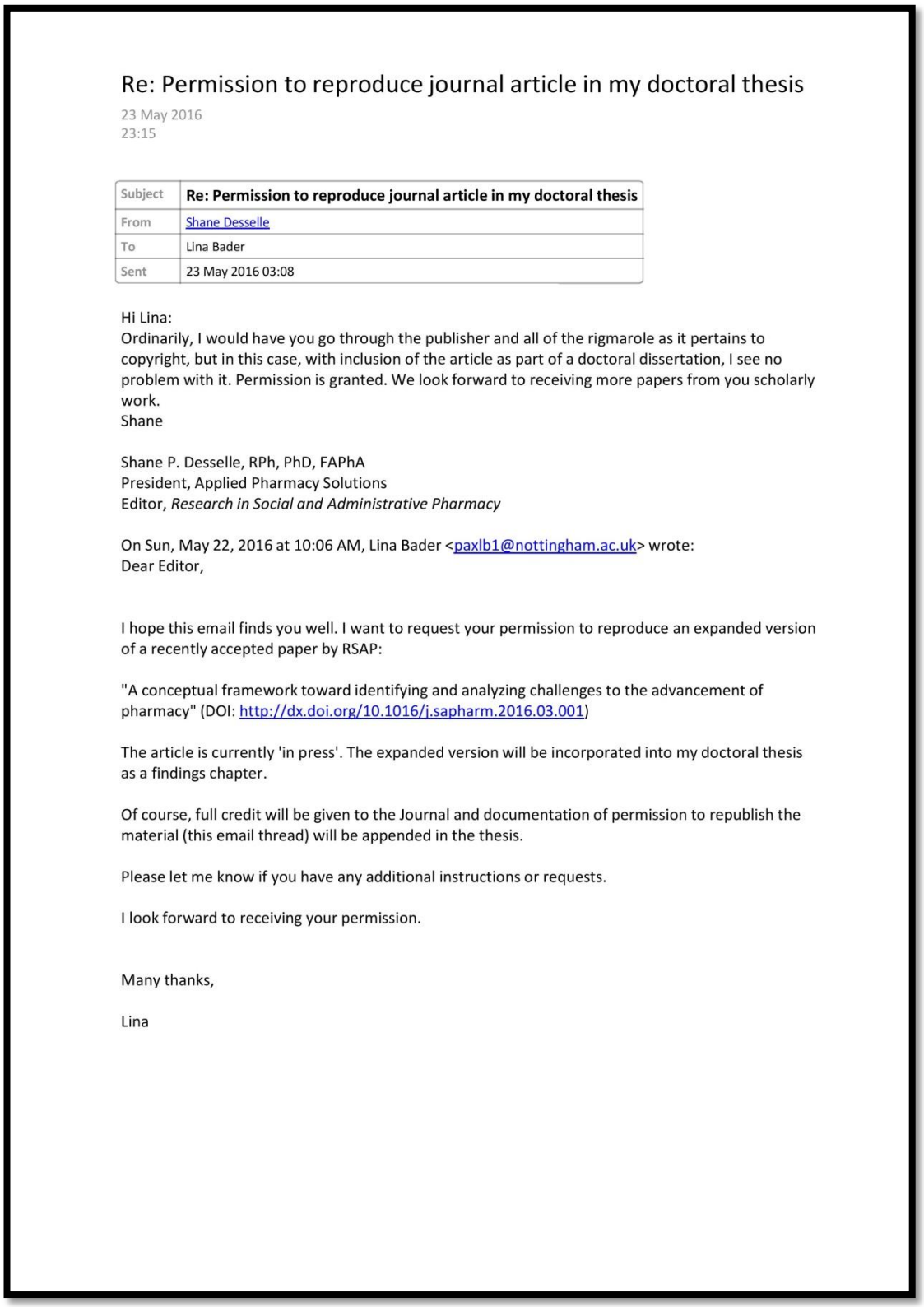
Special acknowledgements:
Claire Anderson (School of Pharmacy)
Simon McGrath (School of Education)

3

Appendix 25 Focus Group Mapping Exercise Sheet



Appendix 26 Permission to Reproduce Journal Article



Re: Permission to reproduce journal article in my doctoral thesis

23 May 2016
23:15

Subject	**Re: Permission to reproduce journal article in my doctoral thesis**
From	Shane Desselle
To	Lina Bader
Sent	23 May 2016 03:08

Hi Lina:
Ordinarily, I would have you go through the publisher and all of the rigmarole as it pertains to copyright, but in this case, with inclusion of the article as part of a doctoral dissertation, I see no problem with it. Permission is granted. We look forward to receiving more papers from you scholarly work.
Shane

Shane P. Desselle, RPh, PhD, FAPhA
President, Applied Pharmacy Solutions
Editor, *Research in Social and Administrative Pharmacy*

On Sun, May 22, 2016 at 10:06 AM, Lina Bader <paxlb1@nottingham.ac.uk> wrote:
Dear Editor,

I hope this email finds you well. I want to request your permission to reproduce an expanded version of a recently accepted paper by RSAP:

"A conceptual framework toward identifying and analyzing challenges to the advancement of pharmacy" (DOI: http://dx.doi.org/10.1016/j.sapharm.2016.03.001)

The article is currently 'in press'. The expanded version will be incorporated into my doctoral thesis as a findings chapter.

Of course, full credit will be given to the Journal and documentation of permission to republish the material (this email thread) will be appended in the thesis.

Please let me know if you have any additional instructions or requests.

I look forward to receiving your permission.

Many thanks,

Lina

	2) In which CALENDAR YEAR was the institution or university established?	
	3) In which CALENDAR YEAR was the first batch graduated?	
	4) If no one has graduated yet, when is the first batch expected to graduate and how many are they?	
	5) How many B.Sc. students are currently in their first year?	
	6) How many B.Sc. students are currently in their second year?	
	7) How many B.Sc. students are currently in their third year?	
	8) How many B.Sc. students are currently in their fourth year?	
	9) How many B.Sc. students are currently in their fifth (final) year?	
	10) Current maximum capacity for new admissions to the first year?	
	11) How many B.Sc. students are currently enrolled?	Total: Female: Foreign:
	12) How many students are currently enrolled in your Pharm. D programme (if available)?	
LANGUAGE(s) used in teaching and assessment		
12.	1) Main teaching language	
	2) Other teaching language(s)	
	3) Main assessment language	
	4) Other assessment language(s)	
OWNERSHIP of the faculty, school or department of pharmacy		
13.	1) Ministry of Health	☐ Yes ☐ No
	2) Ministry of Higher Education	☐ Yes ☐ No
	3) Public state/government owned	☐ Yes ☐ No
	4) Private not for profit	☐ Yes

earcher Code

015)

		☐ No	
	5) Private for profit	☐ Yes ☐ No	
	6) Public/private mix (Please provide details in the space provided on the right)	☐ Yes ☐ No	Details:
	7) Others (Please provide details in the space provided on the right)	☐ Yes ☐ No	Details:

ACADEMIC PROGRAMMES

List of academic programmes offered by the faculty, school or department of pharmacy					
		Formal Name of Academic Programme	Title of Qualifications Awarded	Minimum duration of Programme (Years)	Minimum number of Credits/ Hours
14.	1) Academic programme 01				
	2) Academic programme 02				
	3) Academic programme 03				
	4) Academic programme 04				
	5) Academic programme 05				
	6) Academic programme 06				
	7) Academic programme 07				

	8) Academic programme 08				
	9) Academic programme 09				
	10) Academic programme 10				
List of school departments					
15.	1) Department 1				
	2) Department 2				
	3) Department 3				
	4) Department 4				
	5) Department 5				

The current list of available teaching staff/faculty to teach the academic pharmacy programmes.

Faculty Numbers					
		Total Number/ Name	Field/ Specialty	University/Country	Expected Year of Return
16.	1) Academic staff		N/A	N/A	N/A
	2) Other staff		N/A	N/A	N/A
	3) Planned Staff				

		1._____ 2. _____ 3. _____ 4. _____ 5. _____	1._____ 2. _____ 3. _____ 4. _____ 5. _____	1. _____ 2. _____ 3. _____ 4. _____ 5. _____	1. 2. 3. 4. 5.
	4) Other planned staff		N/A	N/A	N/A

Teaching staff having a FORMAL QUALIFICATION in education/teaching and learning

17.	Does the school, faculty or department offer opportunities for teachers to attain **formal** qualifications in education/teaching and learning?	

MAIN ACADEMIC PROGRAMME for your school

	Name of Academic Programme	Title of Qualification

	2) A special branch of secondary school *(please specify whic space provided on the right)*
	3) Diploma, degree or certificate *(please specify what type i provided on the right)*
	4) A special course *(please specify what course in the space right)*
	5) Entrance examination (national or supra-national)
	6) Entrance examination of the faculty or school
	7) Interview
	8) Others *(please provide details in the space provided on th*

The facilities or sites for the training of stude

Does the faculty, school or department own or use any of the follow school or department.	
23	Are pre-registration hours integrated into the curricula?
24.	1) Hospital(s) owned by the school
	2) Other hospital(s)/ clinical sites
	3) Community pharmacies/ dispensaries

			Awarded
18.	1) What is the MAIN ACADEMIC PROGRAMME for your school?		
	2) Is the MAIN ACADEMIC PROGRAMME accredited by the national authorites e.g. MoHE?		
	3) Is the MAIN ACADEMIC PROGRAMME accredited by the national profession association/syndicate (Jordanian Pharmacists Association)?		
	4) Are there other current or planned accreditations for your MAIN ACADEMIC PROGRAMME?		

Financing of education in the MAIN ACADEMIC PROGRAMME

Cost for educating pharmacy students				
		Amount (please response in numbers e.g. 1000)	Currency	Year of data
19. Domestic students	Tuition fee for domestic (HOME) students per credit hour			
20. Overseas/ international students	Tuition fee for OVERSEAS students per credit hour			
21. Other type of student?	Tuition fee for OTHER TYPE of students for credit hour Please specify:_____			

MINIMUM requirement for admission to the main academic programme

Which of the following are required for admission to this academic programme? *(You can indicate more than one option.)*			
22.	1) Secondary school leaving exam	☐ Yes	Additional information:

	4) Industry sites	☐ Yes ☐ No	Please specify:
	5) Other practice areas	☐ Yes ☐ No	Please specify:
	6) Laboratories	☐ Yes ☐ No	Please specify types and numbers of laboratories:
	7) Teaching dispensary	☐ Yes ☐ No	Please specify funding source:
	8) Virtual pharmacies (computer-based)	☐ Yes ☐ No	Please specify programme:
	9) Others	☐ Yes ☐ No	Please specify:

CONTINUING EDUCATION to graduated professionals

25.	Does the faculty or school offer CONTINUING EDUCATION to pharmacists?	☐ Yes ☐ No

Make sure these related documents are available:

26.	1) Vision, mission and objective statements	☐ Attached ☐ Information on website ☐ No
	2) B.Sc. Study plan	☐ Attached

Appendix 28 Global Competency Framework

Global Competency Framework | Version 1

1. Pharmaceutical Public Health Competencies	
Competencies	**Behaviours**
1.1 Health promotion	1.1.1 Assess the primary healthcare needs (taking into account the cultural and social setting of the patient) 1.1.2 Advise on health promotion, disease prevention and control, and healthy lifestyle
1.2 Medicines information and advice	1.2.1 Counsel population on the safe and rational use of medicines and devices (including the selection, use, contraindications, storage, and side effects of non-prescription and prescription medicines) 1.2.2 Identify sources, retrieve, evaluate, organise, assess and disseminate relevant medicines information according to the needs of patients and clients and provide appropriate information
2. Pharmaceutical Care Competencies	
Competencies	**Behaviours**
2.1 Assessment of medicines	2.1.1 Appropriately select medicines (e.g. according to the patient, hospital, government policy, etc) 2.1.2 Identify, prioritise and act upon medicine-medicine interactions; medicine-disease interactions; medicine-patient interactions; medicines-food interactions
2.2 Compounding medicines	2.2.1 Prepare pharmaceutical medicines (e.g. extemporaneous, cytotoxic medicines), determine the requirements for preparation (calculations, appropriate formulation, procedures, raw materials, equipment etc.) 2.2.2 Compound under the good manufacturing practice for pharmaceutical (GMP) medicines
2.3 Dispensing	2.3.1 Accurately dispense medicines for prescribed and/or minor ailments and monitor the dispense (re-checking the medicines) 2.3.2 Accurately report defective or substandard medicines to the appropriate authorities 2.3.3 Appropriately validate prescriptions, ensuring that prescriptions are correctly interpreted and legal

	2.3.4 Dispense devices (e.g. Inhaler or a blood glucose meter)
	2.3.5 Document and act upon dispensing errors
	2.3.6 Implement and maintain a dispensing error reporting system and a 'near misses' reporting system
	2.3.7 Label the medicines (with the required and appropriate information)
	2.3.8 Learn from and act upon previous 'near misses' and 'dispensing errors'
2.4 Medicines	2.4.1 Advise patients on proper storage conditions of the medicines and ensure that medicines are stored appropriately (e.g. humidity, temperature, expiry date, etc.)
	2.4.2 Appropriately select medicines formulation and concentration for minor ailments (e.g. diarrhoea, constipation, cough, hay fever, insect bites, etc.)
	2.4.3 Ensure appropriate medicines, route, time, dose, documentation, action, form and response for individual patients
	2.4.4 Package medicines to optimise safety (ensuring appropriate re-packaging and labelling of the medicines)
2.5 Monitor medicines therapy	2.5.1 Apply guidelines, medicines formulary system, protocols and treatment pathways
	2.5.2 Ensure therapeutic medicines monitoring, impact and outcomes (including objective and subjective measures)
	2.5.3 Identify, prioritise and resolve medicines management problems (including errors)
2.6 Patient consultation and diagnosis	2.6.1 Apply first aid and act upon arranging follow-up care
	2.6.2 Appropriately refer
	2.6.3 Assess and diagnose based on objective and subjective measures
	2.6.4 Discuss and agree with the patients the appropriate use of medicines, taking into account patients' preferences
	2.6.5 Document any intervention (e.g. document allergies, medicines and food, in patient medicines history)
	2.6.6 Obtain, reconcile, review, maintain and update relevant patient medication and diseases history
3. Organisation and Management Competencies	
Competencies	**Behaviours**
3.1 Budget and reimbursement	3.1.1 Acknowledge the organisational structure
	3.1.2 Effectively set and apply budgets
	3.1.3 Ensure appropriate claim for the reimbursement
	3.1.4 Ensure financial transparency
	3.1.5 Ensure proper reference sources for service reimbursement
	3.2.1 Demonstrate organisational and management skills (e.g. know, understand and lead on medicines management; risk management; self management; time management; people management; project management; policy management.)

3.2 Human Resources management	3.2.2 Identity and manage human resources and staffing issues
	3.2.3 Participate, collaborate, advise in therapeutic decision-making and use appropriate referral in a multi-disciplinary team
	3.2.4 Recognise and manage the potential of each member of the staff and utilise systems for performance management (e.g. carry out staff appraisals)
	3.2.5 Recognise the value of the pharmacy team and of a multidisciplinary team
	3.2.6 Support and facilitate staff training and continuing professional development
3.3 Improvement of service	3.3.1 Identify and implement new services (according to local needs)
	3.3.2 Resolve, follow up and prevent medicines related problems
3.4 Procurement	3.4.1 Access reliable information and ensure the most cost-effective medicines in the right quantities with the appropriate quality
	3.4.2 Develop and implement contingency plan for shortages
	3.4.3 Efficiently link procurement to formulary, to push/pull system (supply chain management) and payment mechanisms
	3.4.4 Ensure there is no conflict of interest
	3.4.5 Select reliable supplies of high-quality products (including appropriate selection process, cost effectiveness, timely delivery)
	3.4.6 Supervise procurement activities
	3.4.7 Understand the tendering methods and evaluation of tender bids
3.5 Supply chain and management	3.5.1 Demonstrate knowledge in store medicines to minimise errors and maximise accuracy
	3.5.2 Ensure accurate verification of rolling stocks
	3.5.3 Ensure effective stock management and running of service with the dispensary
	3.5.4 Ensure logistics of delivery and storage
	3.5.5 Implement a system for documentation and record keeping
	3.5.6 Take responsibility for quantification of forecasting
3.6 Work place management	3.6.1 Address and manage day to day management issues
	3.6.2 Demonstrate the ability to take accurate and timely decisions and make appropriate judgments
	3.6.3 Ensure the production schedules are appropriately planned and managed
	3.6.4 Ensure the work time is appropriately planned and managed
	3.6.5 Improve and manage the provision of pharmaceutical services
	3.6.6 Recognise and manage pharmacy resources (e.g. financial, infrastructure)

4. Professional/Personal Competencies	
Competencies	**Behaviours**
4.1 Communication skills	4.1.1 Communicate clearly, precisely and appropriately while being a mentor or tutor
	4.1.2 Communicate effectively with health and social care staff, support staff, patients, carer, family relatives and clients/customers, using lay terms and checking understanding
	4.1.3 Demonstrate cultural awareness and sensitivity
	4.1.4 Tailor communications to patient needs
	4.1.5 Use appropriate communication skills to build, report and engage with patients, health and social care staff and voluntary services (e.g. verbal and non-verbal)
4.2 Continuing Professional Development (CPD)	4.2.1 Document CPD activities
	4.2.2 Engage with students/interns/residents
	4.2.3 Evaluate currency of knowledge and skills
	4.2.4 Evaluate learning
	4.2.5 Identify if expertise needed outside the scope of knowledge
	4.2.6 Identify learning needs
	4.2.7 Recognise own limitations and act upon them
	4.2.8 Reflect on performance
4.3 Legal and regulatory practice	4.3.1 Apply and understand regulatory affairs and the key aspects of pharmaceutical registration and legislation
	4.3.2 Apply knowledge in relation to the principals of business economics and intellectual property rights including the basics of patent interpretation
	4.3.3 Be aware of and identify the new medicines coming to the market
	4.3.4 Comply with legislation for drugs with the potential for abuse
	4.3.5 Demonstrate knowledge in marketing and sales
	4.3.6 Engage with health and medicines policies
	4.3.7 Understand the steps needed to bring a medicinal product to the market including the safety, quality, efficacy and pharmacoeconomic assessments of the product
4.4 Professional and ethical practice	4.4.1 Demonstrate awareness of local/national codes of ethics
	4.4.2 Ensure confidentiality (with the patient and other healthcare professionals)
	4.4.3 Obtain patient consent (it can be implicit on occasion)
	4.4.4 Recognise own professional limitations
	4.4.5 Take responsibility for own action and for patient care

4.5 Quality Assurance and Research in the work place	4.5.1 Apply research findings and understand the benefit risk (e.g. pre-clinical, clinical trials, experimental clinical-pharmacological research and risk management)
	4.5.2 Audit quality of service (ensure that they meet local and national standards and specifications)
	4.5.3 Develop and implement Standing Operating Procedures (SOP's)
	4.5.4 Ensure appropriate quality control tests are performed and managed appropriately
	4.5.5 Ensures medicines are not counterfeit and quality standards
	4.5.6 Identify and evaluate evidence-base to improve the use of medicines and services
	4.5.7 Identify, investigate, conduct, supervise and support research at the workplace (enquiry-driven practice)
	4.5.8 Implement, conduct and maintain a reporting system of pharmacovigilance (e.g. report Adverse Drug Reactions)
	4.5.9 Initiate and implement audit and research activities
4.6 Self-management	4.6.1 Apply assertiveness skills (inspire confidence)
	4.6.2 Demonstrate leadership and practice management skills, initiative and efficiency
	4.6.3 Document risk management (e.g. critical incidents)
	4.6.4 Ensure punctuality
	4.6.5 Prioritise work and implement innovative ideas

Appendix 29 Empties: List of Unused Codes

Competency	Behaviour
2.2 Compounding medicines	2.2.2 Compound under the good manufacturing practice for pharmaceutical (GMP) medicines
2.3 Dispensing	2.3.2 Accurately report defective or substandard medicines to the appropriate authorities
	2.3.4 Dispense devices (e.g. Inhaler or a blood glucose meter)
	2.3.6 Implement and maintain a dispensing error reporting system and a 'near misses' reporting system
	2.3.7 Label the medicines (with the required and appropriate information)
	2.3.8 Learn from and act upon previous 'near misses' and 'dispensing errors'
2.4 Medicines	2.4.1 Advise patients on proper storage conditions of the medicines and ensure that medicines are stored appropriately (e.g. humidity, temperature, expiry date, etc.)
	2.4.4 Package medicines to optimise safety (ensuring appropriate re-packaging and labelling of the medicines)
2.5 Monitor medicines therapy	2.5.3 Identify, prioritise and resolve medicines management problems (including errors)
2.6 Patient consultation and diagnosis	2.6.1 Apply first aid and act upon arranging follow-up care
	2.6.2 Appropriately refer
	2.6.3 Assess and diagnose based on objective and subjective measures
	2.6.5 Document any intervention (e.g. document allergies, medicines and food, in patient medicines history)
	2.6.6 Obtain, reconcile, review, maintain and update relevant patient medication and diseases history