



Factors Influencing CPD Effectiveness and Practices in the Healthcare Sector in Jordan

HRH2030: Human Resources for Health in 2030

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HRH2030: Human Resources for Health in 2030

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Disclaimer

The views expressed in this research publication including its interpretation of findings and recommendations are entirely those of the research team and do not necessarily reflect the views of Ministry of Health, USAID, or the United States Government.

Contents	
Acknowledgments	2
Disclaimer	2
Contents	3
Acronyms	4
Executive Summary	2
Introduction	3
Methodology	7
Findings	11
Discussion and Recommendations	38
Discussion	39
Recommendations	43
Conclusions	45
References	46
Annex A. Quantitative Questionnaire	49
Annex B.1. Qualitative interview guide for key informants	53
Annex B.2 Qualitative Interview Guide for Healthcare Professionals	55
Annex C.1. Informed Consent – Focus Group Discussions	57
Annex C.2. Informed Consent – Individual Interviews	58
Annex D.1. Extra Tables	59
Annex D.2. Extra Figures	74
Annex D.3. Definitions and Sample Size Calculation	79

Acronyms

CPD	Continuing Professional Development
CPE	Continuing Professional Education
FGD	Focus Group Discussion
GOJ	Government of Jordan
HCAC	Healthcare Accreditation Council
HCP	Healthcare Professional
HHC	High Health Council
HRH2030	Human Resources for Health in 2030
KAUH	King Abdullah University Hospital
KII	Key Informants Interviews
JMC	Jordan Medical Council
JNC	Jordan Nursing Council
JUH	Jordan University Hospital
MOH	Ministry of Health
RMS	Royal Medical Services
USA	United States of America
USAID	US Agency for International Development
UNRWA	United Nations Relief and Works Agency
WHO	World Health Organization

Executive Summary

Continuing Professional Development (CPD) programs for healthcare providers in Jordan are still in their infancy and need to be strengthened to meet the needs of professionals in Jordan's health sector and ultimately improve health outcomes. This research report on CPD for healthcare providers in Jordan is the first of its kind and presents a thorough review of factors that influence CPD offerings, needs, practices, experiences, and effectiveness in the healthcare sector in Jordan. This research has been initiated by the Human Resources for Health in 2030 (HRH2030) activity at the request of the Jordanian Ministry of Health (MOH) and the High Health Council (HHC) with the support of the United States Agency for International Development (USAID). The results of this research are intended to help shape the development of a national CPD system for Jordan's healthcare sector.

This study used a mixed methods design utilizing quantitative and qualitative data. Healthcare sectors included in the study were the MOH, private sector, the Royal Medical Services (RMS) and university hospitals. Representatives from five healthcare professional groups were included, namely physicians, dentists, pharmacists, nurses, and allied healthcare professionals. Samples were collected from three governorates – Irbid, Amman, and Al-Karak – which represent a broad geographic sample and cover urban and rural settings. 2,204 participants completed the quantitative survey and 22 key informants were interviewed individually. In addition, 18 focus group discussions were conducted.

The findings showed that 61.1% of the respondents attended a conference in the past two years, 61.9% attended a training workshop in the past two years, and only 35.2% participated in an online activity. Participation in CPD related activities was generally below internationally reported annual participation levels of 80-90% in CPD designed programs among licensed HCPs, especially in research related activities. Approximately half the study participants were aware of their current CPD requirements. Career progression and personal interests were the top motivators to participate in CPD while national policy and departmental/section policy were the lowest motivators.

Positive attitudes toward CPD were shown by the vast majority of study participants who indicated that CPD is important (91.7% of respondents), keeps them up to date (92.8%), improves their practices (92.5%), and ensures better outcomes for patients (91.2%). With respect to the impact of CPD, the majority of respondents stated that their current CPD participation had enhanced their knowledge (89%) and improved their practical skills (87.2%).

However, significant barriers still impede participation in CPD. Findings showed that staff shortages, heavy workloads, and limited funds were the biggest barriers to participation in CPD. The data also indicated that women were accessing CPD opportunities significantly less than men. In addition, physicians, dentists, and pharmacists were more frequently using CPD when compared to nurses and allied health professionals. Distance also impeded access with respondents indicating that time away from families and/or work made it more difficult to participate. Accordingly, any new CPD framework needs to adequately address these barriers and identify creative solutions to them.

E-learning (reported by 64.1% respondents) and other internet sources (58.2%) were the top contributors to current CPD participation, while attendance at council's conferences was the lowest contributor (29.6%). Enablers to participation were cited as supportive administrations,

protected time to attend CPD activities, having a culture and an environment that valued CPD, and sufficient incentives to participate such as an increased chance of promotion and/or pay.

The findings also showed that journal or internet reading, interactive activities in small groups, and lectures in large group settings were the most preferred CPD activity types, with participants less interested in CPD activities which focused on research. Participants showed a high degree of support for CPD, recognized its importance for their work, and were supportive of making it mandatory particularly if cost could be decreased. With respect to CPD content, respondents were more interested in content which focused on health/medical informatics (83%) and activities aimed at enhancing their skills in evidence-informed practice (81.4%) than they were in broader areas of endeavor such as management courses.

Respondents suggested several key areas for improvement to CPD policy and delivery. Mandating policies that require HCPs to complete a certain number of CPD activities or hours for re-licensing was important to most participants. Other participants recommended the establishment of accreditation bodies for CPD activities, defining the number of required CPD hours or credits according to particular healthcare professions, provision for flexible working hours, and instituting a range of new policies to support CPD. These policies included mandating paid leave to attend CPD activities, providing incentives (financial and promotional) to attend CPD, ensuring a fair and equitable process for who is selected to attend CPD, and the introduction of cost free or subsidized CPD. The findings of this study suggest a number of key changes be made to Jordan's CPD regulation, policy frameworks, implementation, and evaluation. These include:

- Regulating CPD to be mandatory for re-licensing of HCPs
- Accrediting CPD providers and their programs nationally
- Greater utilization of innovative approaches to CPD activities to ensure access including increasing application of e-learning
- Developing a national framework involving healthcare organizations, councils, professional associations and the government to explore solutions to funding challenges
- Conducting further research that focuses on evaluating the impact of CPD programs on HCP's practice and patient outcomes.

Introduction

Research Purpose

The purpose of this research was to provide a better understanding of the state of CPD in the healthcare sector in Jordan to inform the development of Jordan's first CPD framework and system. This research will support the implementation of Jordan's 2018 bylaw on mandatory license renewals for healthcare professionals which provides that HCPs must complete CPD to renew their license. The findings of this research will also provide policymakers with baseline information concerning current CPD practices, experiences, and attitudes of HCPs towards CPD, as well as enablers and contributors to effective CPD in Jordan.

In July 2017, the Government of Jordan (GOJ) committed to introducing a new bylaw mandating the license renewal of all HCPs in Jordan to be developed through an appointed national committee. Additionally, the HHC Board adopted Jordan's National HRH Strategy in March 2018, and linking CPD to license renewals for HCPs was identified as a top objective to enhance the competencies of Jordan's human resources for health (HRH) To support the evidence-based implementation of this bylaw and associated instructions, HRH2030 initiated this research to

provide data for the MOH, HHC, and other health stakeholders in the design and delivery of a corresponding national CPD system. Research was conducted from October 2017 to September 2018.

Factors Influencing CPD Globally

CPD and Continuing Professional Education (CPE) are often used interchangeably in literature. While CPE focuses on formal education contexts, CPD focuses on self-directed learning (Grant & Stanton, 1998). CPE is considered an essential component of CPD (Murphy, Cross & McGuire, 2006). Moreover, CME is concerned with “updating only clinical knowledge”, whereas, CPD focuses on improving knowledge, skills and attitudes necessary for competent practice (Peck et al., 2000). CPD is defined by the World Health Organization (WHO) as “the wide-ranging competencies beyond clinical update, research and scientific writing, multidisciplinary context of patient care, ethical practice, communication, management and behavioral skills, team building, information technology, audit, and appropriate attitudinal change to ensure improved patient outcomes and satisfaction” (WHO, 2010).

CPD is now widely considered to be an integral component of an efficient and effective healthcare system. The Royal College of Nursing in the United Kingdom states that CPD is “...fundamental to the development of all health and social care practitioners, and ... the mechanism through which high-quality patient and client care is identified, maintained and developed” (Royal College of Nursing, 2007). CPD plays a role in enhancing the quality of patient care and improves job satisfaction and retention of staff (Cooper, 2009).

Healthcare organizations and institutions need to ensure that HCPs are competent and accountable for the delivery of high quality and safe care. If employers require staff who possess the right skills and knowledge to do this, then they must create workplace conditions that encourage them to take part in CPD activities (O’Sullivan, 2004; van Wijk, 2007). In addition to enhancing healthcare competence in knowledge and skills, CPD provides healthcare professionals with in-depth knowledge and skills in management, team building, professionalism, interpersonal communication, technology, teaching, and accountability (Hemmington, 2000; Schostak et al., 2010).

Studies have shown that CPD is a key to improving clinical competence, enhancing patient outcomes, and retention of staff (van Wijk, 2007). Davis and colleagues (1999) conducted a meta-analysis of 14 randomized control trails of formal didactic and/or interactive continuing medical education. The results showed that interactive and mixed educational sessions had an impact on practice and, on occasion, healthcare outcomes. On the other hand, the analysis showed that didactic sessions did not show an effect on changing physicians’ performance.

The commitment of both healthcare professionals and healthcare organizations to CPD is affected by several factors which are largely universal. These factors include professional development planning, the existence of a learning culture, the organizational climate, and the dynamics of change (Hallin & Danielson, 2007). Participation in CPD, however, is rarely guaranteed and is often impacted upon by the prohibitive cost of courses or associated travel, inability to access leave to participate due to workload, and personal commitments, particularly in the home that make additional learning difficult. Structural barriers to access to CPD include CPD not being mandated in policy, the unavailability of CPD which matches a HCP’s field of expertise or interest, and CPD policies which tie CPD requirements to a limited number of hours. (Friedman & Woodhead, 2008; Hallin & Danielson, 2007; Hemmington, 2000; Jaradeh &

Abu Hamdeh, 2010; Keane, Lincoln, Smith, 2012; Lloyd et al., 2013; Priscah et al., 2017; Schostak et al., 2010; UBC CPD, 2014).

Studies have shown that enablers to participation include the availability of conferences which cover topics of interest to the healthcare professional, an intrinsic desire to learn and extend knowledge or an area of practice, a belief that CPD improves practice, the location of the activity, access to experts and learning networks, supportive management and positive staff attitudes including protected learning time, awareness and understanding of CPD, the availability of funding, and access to CPD resources. (Al-Ma'aitah & Momani, 1999; Hallin & Danielson, 2007; Hemmington, 2000; Schostak, et al., 2010; UBC CPD, 2014).

Jordan Context

Jordan has one of the most modern healthcare infrastructures in the Middle East. Health indicators such as under-five mortality rate, maternal mortality ratio, and deaths due to malaria and tuberculosis are improving. However, Jordan's economy is under considerable strain with economic growth sluggish (predicted to be only 2.4% of GDP in 2018) (World Bank, 2018), high external debt, high unemployment, instability within the region leading to a large influx of refugees, and a scarcity of natural resources to drive growth (HHC 2015). This in turn has placed considerable strain on Jordan's health services (and future health services). Within this context access to a highly competent health workforce remains critical. The largest providers of health services in Jordan are the MOH (accounting for 38%), the private sector (34%), the RMS (18%), and university hospitals (9%) (USAID, 2016).

Due to a lack of natural resources, Jordan is increasingly reliant on the services sector to drive economic growth. Within this context, Jordan is attempting to position itself as a leading medical tourism destination within the region. To do this and meet its domestic demands, it will need a high caliber workforce. In 2017, Jordan had 22 physicians, 15 pharmacists, 29 nurses, and 7 dentists per 10,000 head of population. These ratios have increased only slightly from 2017 except nurses who saw an increase of approximately 10% (MOH, 2017). Comparatively, Jordan has more physicians than the mean for the region which is 20 physicians per 10,000 (Asbo et al., 2017). On the other hand, the ratio for nurses in Jordan is lower than the mean which is 36.5 per 10,000 head of population (Asbo et al., 2017). However, in a fiscally constrained environment Jordan is unlikely to experience a rapid increase in the number of health practitioners in the coming years which makes ensuring that the current workforce is well trained even more critical.

Formulation of national health policy in Jordan is the responsibility of the HHC and the MOH which are also supported by the Jordanian Nursing Council (JNC) and Jordan's Medical Council (JMC). Human resource policies and plans are developed by the MOH, multiple governmental and non-governmental agencies, as well as international organizations. These overlapping mandates have led to duplication in policy and decision-making processes (HHC, 2016). In addition, the National Strategy for the Health Sector in Jordan 2016-2020 noted the lack of a comprehensive national plan for the promotion and development of human resources for health (HHC, 2016).

The provision of quality essential healthcare services depends in large part on access to well-educated and trained healthcare providers. In Jordan, however, the health system is constrained by limited staff development and training opportunities and a general lack of monitoring and evaluation of the broader health system (World Bank, 2017).

Continuous medical education programs are mainly administered and supervised by the JMC; the JNC largely oversees continuous education programs for nursing. Internship and specialist programs are offered only to physicians and dentists in the public and private sectors and university hospitals. However, continuous education programs that are offered are not provided on a regular or compulsory basis. Most of these programs are provided in the form of on-the-job training, seminars, workshops, and conferences, noting that many hospitals do not allocate a special budget for training and implementation of studies and research. Registration at professional health associations (unions) in Jordan is mandatory for granting licenses to HCPs to practice, while JMC conducts the examinations for granting certificates for general practitioners and specialists (HHC, 2016). The military's RMS has its own system for development and training of their staff that is tied to their professional clinical ladder. The Health Care Accreditation Council (HCAC), a non-profit private organization, accredits health-related training programs, which are not subject to the mandate of the Board of Higher Education or the JMC (HHC, 2016).

According to a recent World Bank report, Jordan can improve the quality of health services by using incentives such as promotion and/or pay, increasing monitoring to strengthen accountability, and improving the performance of health service providers (World Bank, 2017). Ensuring a qualified health workforce aligns with Jordan's Vision 2025 goal of achieving universal health coverage. The GOJ also considers the development of a sustainable CPD system for healthcare professionals a national priority (USAID, 2017) with a standalone pillar on enhancing the competencies of human resources for health identified in the National Human Resources for Health Strategy for Jordan (2018-2022). This pillar includes a focus on relicensing and CPD. There have also been encouraging policy and regulatory developments recently which support the strengthening of Jordan's CPD system. In April 2018, for example, a new bylaw on the mandatory renewal of licenses for healthcare professionals was enacted. In 2017, a new regulation was also enacted mandating that dentists renew their licenses every five years based on acquiring 50 CPD units (USAID, 2017). Subsequently, a national re-licensing committee of key stakeholders was appointed by the Minister of Health and headed by the Secretary General of the HHC to draft a re-licensure regulation based on CPD requirements (USAID, 2017).

Knowledge Gap on CPD in Jordan's Healthcare Sector

Evidence-based methods to restore, develop, maintain, and continuously improve core competencies of healthcare professionals are increasingly considered a strategic necessity by policymakers and national stakeholders in Jordan. This agenda also aligns with the expected national goals of Jordan's Vision 2025 and its Developmental Program 2016-2019, the Governmental Action Plan and the National Health Strategy (2016-2020), the National Strategy for Human Resource Development 2016-2025, as well as the Universal Health Coverage and Sustainable Developmental Goals (USAID, 2017).

HCPs who have completed training and are deemed qualified to practice are expected to maintain competency and consequently spend a considerable amount of time engaged in CPD activities. International studies have shown that change in a HCP's behavior is more likely to occur when a meaningful assessment of the learning needs serves as the basis for determining the content of CPD (Bower et al., 2008; Elshami et al., 2016). Only one Jordanian study was found that investigated the experiences of CPD focusing on nurses in private hospitals (Jaradeh & Abu Hamdeh, 2010); another study investigated Jordanian nurses' continuing education needs (Al-Ma'aitah and Momany, 1999). The results of the Jaradeh and Abu Hamdeh study (2010) showed that nurses were motivated to participate in CPD by a desire to enhance the quality of nursing care, improve performance, increase professional knowledge, enhance self-esteem, and

develop the profession. The study also reported that barriers for engagement in CPD activities included difficulties accessing CPD, irrelevance of CPD, lack of time, cost, and work-life imbalance. The study of Al-Ma'aitah and Momany (1999) found that the priority content for continuing education programs was reported by nurses as critical care, emergency room nursing, delegation and accountability, power and authority, innovation, and patient education. The study also highlighted the lack of motivation of nurses to be engaged in continuing education programs and emphasized the importance of HCPs seeing a tangible benefit from engaging in such programs. However, more detailed studies are needed to better understand the current CPD needs of HCPs in Jordan.

Methodology

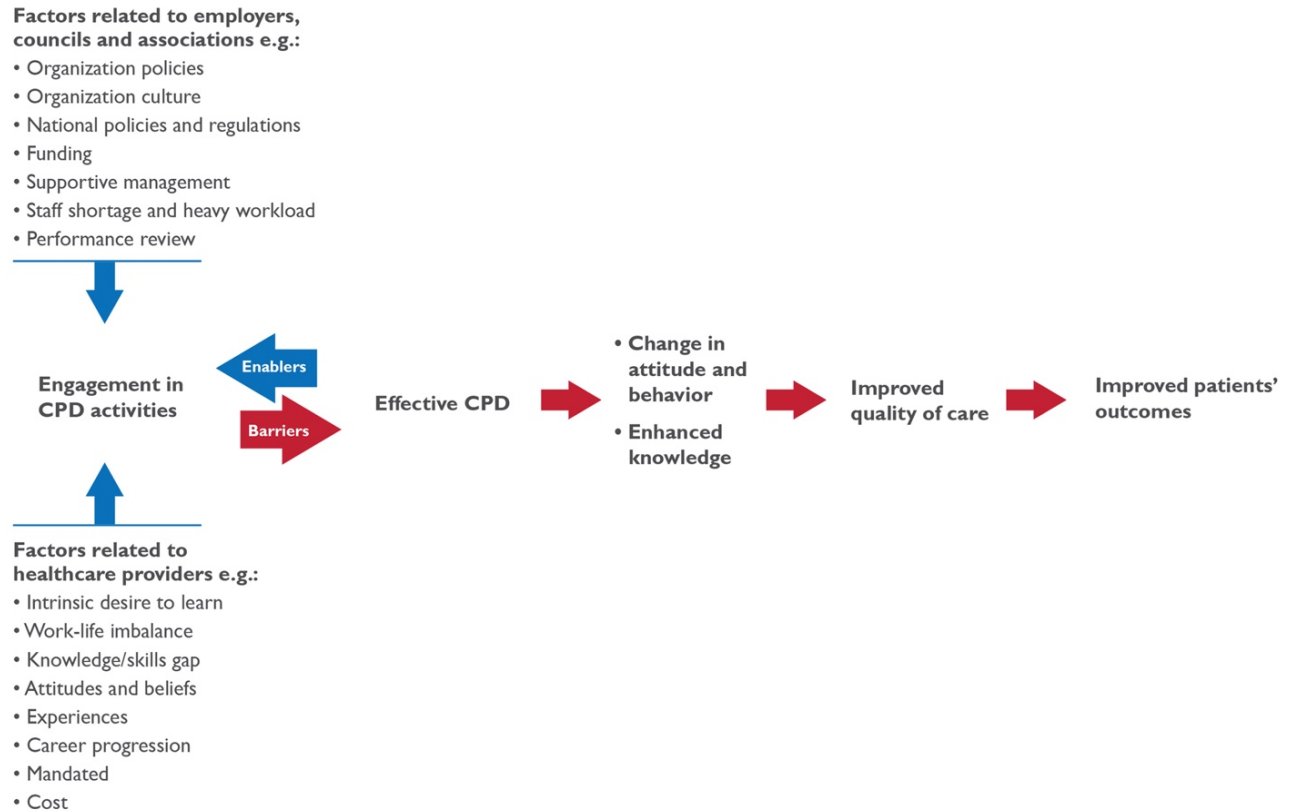
Research Questions

The following questions guided the research:

1. What CPD is currently offered to healthcare HCPs including physicians, nurses, dentists, pharmacists, and allied healthcare professionals, what is its quality, and what are the CPD needs of healthcare HCPs?
2. What are the perceived enablers, barriers, experiences, and attitudes of healthcare professionals towards CPD?
3. How do participants judge the effectiveness of current CPD practices and instituted policies and do they meet the needs of HCPs?
4. What improvements to the policies, content, and delivery of CPD are needed to meet the demand for CPD and achieve measurable improvements in quality of care and patient outcomes?

A theoretical framework was developed based on a literature review conducted by the researchers in October 2017 (see Figure 1). The researchers hypothesized that effective CPD would change the attitudes, enhance the knowledge and skills of HCPs, and ultimately result in improved quality of care and patient outcomes. Effective CPD, in turn, is affected by several determinants (enablers or barriers). The model below guided the design of the research including construction of survey and interview questions, and interpretation of the results.

Figure 1. Factors that shape engagement in CPD and its impact on improved patient outcomes.



Study Design

This study employed a mixed method design utilizing qualitative and quantitative data. This included:

1. A situational analysis describing the CPD system, content, and processes used in Jordan
2. A quantitative approach using a structured self-administered questionnaire to collect data from healthcare professionals about CPD practices, experiences, attitudes, needs, and effectiveness, as well as enablers and barriers to participation in CPD
3. A qualitative approach with individual interviews and focus group discussions to elucidate the views of key informants and healthcare providers on issues related to CPD offerings, needs, practices, and effectiveness in the healthcare sector in Jordan

Definitions of variables used in the research can be found at Annex D.3.

Sample and Setting

A stratified clustered convenience sample that represented HCPs including physicians, dentists, pharmacists, nurses, and allied healthcare professionals was used in this study. Participants were stratified based on their profession and the healthcare sector as shown in Table I. Healthcare providers studied included the MOH, the RMS, educational hospitals, private hospitals, and the United Nations for Relief and Works Agency (UNRWA).

Participants in the study came from three governorates within Jordan: Irbid, Amman, and Al-Karak. These governorates were chosen as they represent a good representative geographic cross-section of Jordan: Irbid is in the North, Amman in the center, and Al-Karak is further south. In addition, Al-Karak is rural while Amman and Irbid are urban centers. These areas were also chosen as each contained a good mix of different health service providers.

Table I. Number of currently practicing HCPs employed by healthcare sectors

Healthcare Provider	MOH	RMS	KAUH	JUH	Private Hospitals	UNRWA	Total
Physicians	4,697	1,822	544	785	5,336	103	13,287
Dentists	799	460	22	41	5,435	30	6,787
Pharmacist	708	280	38	29	13,917	2	14,974
Nurses	5,053	3,810	764	488	5,045	46	15,206

MOH, 2016

HCPs were asked to participate in the study and they have been asked to self-respond to the questionnaire upon their participation approval. A total of 2,204 HCPs were included in the sample according to one proportion sample size calculation method and they were distributed among healthcare sectors and professions based on their share proportions. Further detail on the calculation of the sample size is in Annex D.3. The number of participants from each governorate, health sector, and profession based on their business share is shown in Table D.I in Annex D.I. Samples from the MOH included professionals who work at primary healthcare centers (HCC).

The qualitative sample was selected purposively. Key informants included representatives from the HHC, the JNC, the JMC, academic institutions, professional associations, healthcare organizations, and HCPs from hospitals. Table D.2 in Annex D.I presents the collected sample size of key informants and HCPs.

Quantitative and Qualitative Data Collection Tools

A structured, pre-tested, and self-reported questionnaire adapted from previous studies (Alsharif & Al-Khalidi, 2001; Bower et al., 2008; Elshami et al., 2016; Shah et al., 2017), and based on the conceptual framework was used to collect the data (see Annex A). The questionnaire consisted of ten sections on participants':

1. demographic data
2. current involvement in CPD activities such as attending conferences, workshops, and online courses
3. motivations to participate in CPD
4. attitudes towards CPD
5. perceived benefits and impact of current CPD participation
6. perceived barriers to CPD participation
7. CPD providers
8. preferences for CPD design by activity type
9. views on the necessity of CPD
10. CPD interests

The questionnaire was validated by HRH2030's Research Advisory Group and was pilot-tested before data collection commenced.

The semi-structured interview approach was used to collect qualitative data from key informants and HCPs. Key Informant Interviews (KII) and Focus Group Discussions (FGD) were led by a moderator utilizing a semi-structured guide with free-flowing dialogue. A guide for interview questions was constructed based on a literature review (see examples at Annex B.1 and B.2). Focus groups consisted of four to ten healthcare professionals.

Data Analysis

Quantitative data was analyzed using R statistical computing software (version 3.4.3). Descriptive analysis including means, frequencies, and proportions were used to describe the sample, CPD needs, and perceived enablers, barriers, experiences, and attitudes of healthcare professionals towards CPD. For categorical responses, the chi-squared test was used to examine differences between HCPs and between healthcare sectors while ANOVA was used to test for differences for numerical responses. Binary logistic regression combined with stepwise selection was used to identify significant predictors of current CPD participation. A significance level of 0.05 was used throughout the analysis.

Content analysis was used for qualitative data. The five-stage 'framework approach' was used (Pope et al., 2000). This framework consists of familiarization, identification of thematic framework, indexing of the transcripts, abstraction, and synthesis through charting, conceptual mapping, and interpretation. First, the researchers looked at the raw data several times and listed key themes. Second, the thematic framework was defined based on the research questions and purpose of the research, reviewed literature, and issues arising from preliminary interviews, in addition to themes raised from the first stage during the familiarization process. Indexing the data for easy retrieval and further exploration was done at this stage. Third, the identified themes were systematically applied to all data in the text. Fourth, the researchers assigned the data to the appropriate theme or key issues. Fifth, the researchers used charts and maps to create typologies and find associations between themes to help explain findings (Pope et al., 2000).

Ethical Approval Consideration

Approvals from the institutional review boards of the Jordan University of Science and Technology, the MOH, the RMS, and targeted hospitals were granted before data collection commenced. Consent forms were obtained from all participants in the qualitative and quantitative studies (see Annexes C.1 and C.2). A brief about the project with contact information of the research consultants, as well as the HRH2030 team, were provided to all participants. Privacy and confidentiality of data was strictly maintained throughout all stages of the research. The anonymity of participants was assured by removal of personal details and the use of identifier codes. Participants were assured that the results of the study would be reported in aggregate and data which could be attributed to individuals would be discarded appropriately once data analysis was complete. Participants were also informed that if for any reason they decided not to continue with the study, they had the right to withdraw at any time. All electronic data was password protected and only accessible by the lead researchers.

Data Collection Procedures

Data collection commenced in December 2017 and was completed in April 2018. For the qualitative component, researchers approached key informants by phone to gain their preliminary approval to participate. Healthcare professionals were contacted in their work settings through their head departments. All interviews were moderated by the researcher or trained research assistants and were audio-taped with the participant's consent. For the quantitative part, the participants were approached in their work settings through collaboration with their administrators to gain their approval to participate in the study.

Quality Assurance

To ensure the quality of the research and credibility of the data, the researchers adopted the following approaches:

1. The quantitative questionnaire, in-depth interview, and focus group discussion guides were pre-tested. The quantitative structured questionnaire was pilot tested with 50 HCPs. The FGD and interview guides were examined by three leading experts in the field to ensure that they were appropriate for the Jordanian context and could be adapted as necessary. Both quantitative and qualitative tools were modified based on the results of these pilot tests.
2. The research was conducted under the supervision of HRH2030's Research Advisory Committee with the close involvement of the broader HRH2030 team. This included jointly discussing and developing the tools and data collection instruments. The data collection instruments were translated into Arabic for application in the field using forward-backward translation methods.
3. The data collectors were trained by the research team on how to administer the questionnaires and collect the data. With permission, the semi-structured interviews and the FGDs were recorded to avoid data loss.
4. Data was triangulated by asking the same questions to diverse groups of respondents (HCPs including physicians, nurses, dentists, pharmacists, and allied health professionals) using different methods - interviews and FGDs).

Findings

Participants' Demographic Characteristics

This study included a total of 2,204 participants of which 51% were men and 49% were women. Of these, 572 worked at the MOH, 1,108 in the private sector, 201 at university hospitals, and 323 within the RMS. Six participants from UNRWA were added to the participants from the private sector for data analysis as the sample was too small to be included in separate analysis. A total of 457 physicians, 400 dentists, 433 pharmacists, 462 nurses, and 452 allied HCPs participated in this study. A summary of participants' demographic characteristics by healthcare provider group and profession are shown in Table D.3, Table D.4, and Table D.5 in Annex D.I. Distribution of participants by healthcare provider in the study was consistent with proportions of the included professions by healthcare provider group in Jordan.

Participants' average age was 33 years with an average of nine years of experience. Participants from the MOH had the highest average years of experience of 10 years while participants from the RMS had the lowest experience at 8 years. Only 1.5% of all participants were divorced or widowed, while 38.2% were single and 60.4% were married. The majority of participants had a bachelor's degree in a health-related field, 11.7% had a master's degree, while only 5.2% had a

doctorate. Among all doctorate holders, 75.2% were physicians and 19.5% were dentists. About 79.4% of all participants were graduates from Jordan, 9.7% from other Arab countries, 7.1% from East Europe, 2% from West Europe, 0.2% from the United States of America (USA), and the remaining 1.5% from other countries. As seen in Table D.4 in Annex D.1, most graduates from a non-Jordanian school were either physicians or dentists.

Twenty-two key informants (from medicine, nursing, dentistry, pharmacy, and allied health disciplines) participated in the qualitative data collection by individual interviews. The sample for the key informant interviews was purposively selected; participants came from the MOH, professional councils and associations, hospitals, and universities. Their age and workplace experience ranged from 40 to 63 years and 7 to 25 years, respectively. This range was higher than the average for the quantitative survey respondents, likely because many of the selected key informants were senior-level members of their respective organizations. Fourteen of them were men. In addition, eighteen FGDs were conducted involving 98 HCPs from different disciplines. Table D.6 in Annex D.1 presents the background variables of the HCP participants in the qualitative sample.

Current CPD Practices

Figure 2 and Figure 3 below summarize current CPD practices by health sector and profession, respectively. As shown in these figures, most participants practiced CPD by attending local seminars (60.8%), international conferences (61.1%), training workshops (61.9%), and reading journal articles (59.6%). Only 13.1% of all participants had published an article and only 24.9% had participated in a research-related activity in the past two years. The majority of participants are aware of the latest guidelines related to their profession's CPD (59.8%), but only 38.4% of all participants kept track of their CPD hours/points.

Significant differences among healthcare sectors in publishing scientific articles and participation in research related activities were noted. HCPs from the private sector showed the highest participation in these activities; 45.6% of them published an article in the past two years and 48.4% were involved in a research-based activity. In university or teaching hospitals, where one might assume a more research-focused angle, HCPs had in general the lowest CPD participation percentages regardless of profession. This may be due to the focus on academic or clinical research in university or teaching hospitals, instead of traditional CPD. Of those who attended a conference in the past two years (61.1% of all participants), 8.2% worked at university hospitals, accounting for 54.7% of participants from university hospitals.

Figure 3 shows significantly different CPD practices among healthcare professional groups with physicians generally having the highest CPD participation overall followed by dentists and pharmacists. Much lower levels of participation were reported by nurses and allied health professionals. Average CPD activity participation by healthcare sector and profession is shown in Table D.7 in Annex D.1. A significant difference in the average number of conferences attended in the past two years was found among healthcare sectors. RMS allied HCPs had the highest conference attendance of 1.24 conferences while it was the lowest for the MOH allied HCPs at 0.23 conferences.

Participation in CPD activities by gender, governorate, education level, marital status, and age groups are shown in Figure D.1 (Annex D.2) and Table D.8 through Table D.11 (Annex D.1), respectively. Across all forms of CPD activity, women were less likely to have participated. For example, only 9.2% of females reported having published an article in the past two years

compared to 16.3% of men. In addition, while 59.7% of men had attended two or more conferences in the past five years only 39.7% of women reported the same.

Geographic location played a less significant role in determining participation in CPD as compared to gender (see Table D.8 of Annex D.1). Exceptions were identified with respect to those who had published an article in the past two years - 13.8% of participants in Amman and 9.3% of participants in Al-Karak. In addition, 26.3% of Amman-based participants reported being involved in a research activity while only 15.1% of respondents from Al-Karak reported the same.

Logistic regression technique combined with stepwise selection was used to identify significant predictors of current CPD participation. A HCP was assumed to practice CPD if he/she provided at least one yes answer to the first eight statements in Section II of the distributed questionnaire. As shown in Table 2, identified predictors included years of experience, education level, health sector, profession, and country of graduation. The probability of participation in CPD increased as years of experience increased. Similarly, higher education level increased the probability of CPD participation. HCPs working at the RMS had the highest probability of CPD participation. Dentists had the highest probability of CPD participation among all professions. Finally, graduates of West Europe and the USA reported the highest CPD participation.

Figure 2. Percentage of participants current practices by health sector. Numbers in parentheses are p-values for testing significance of differences among health sectors.

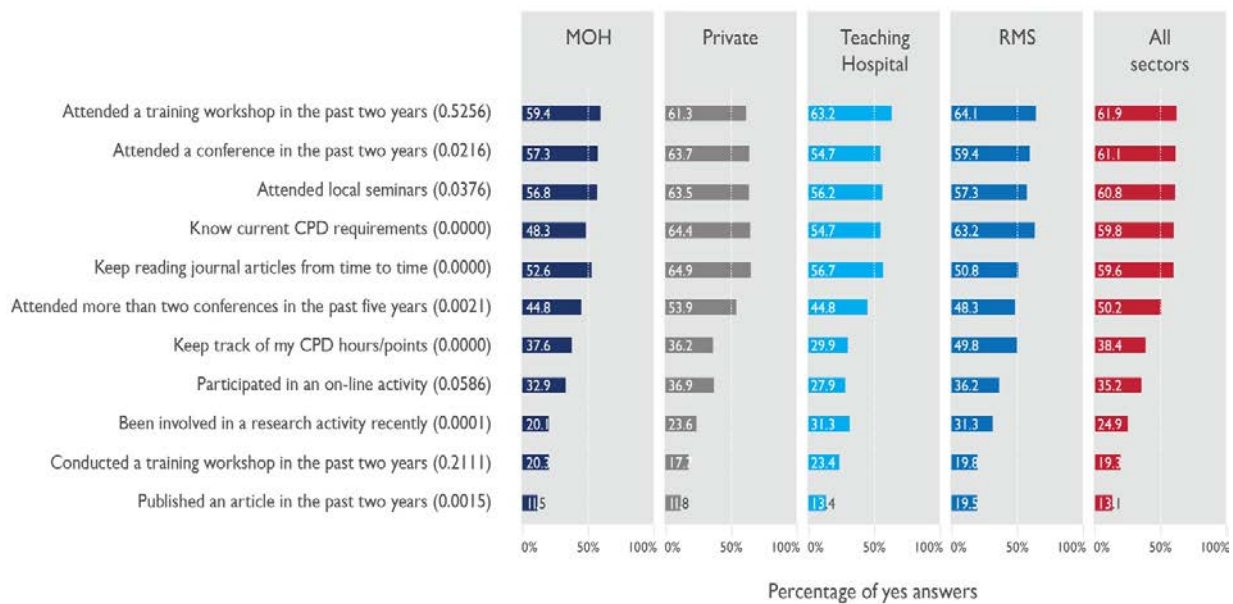
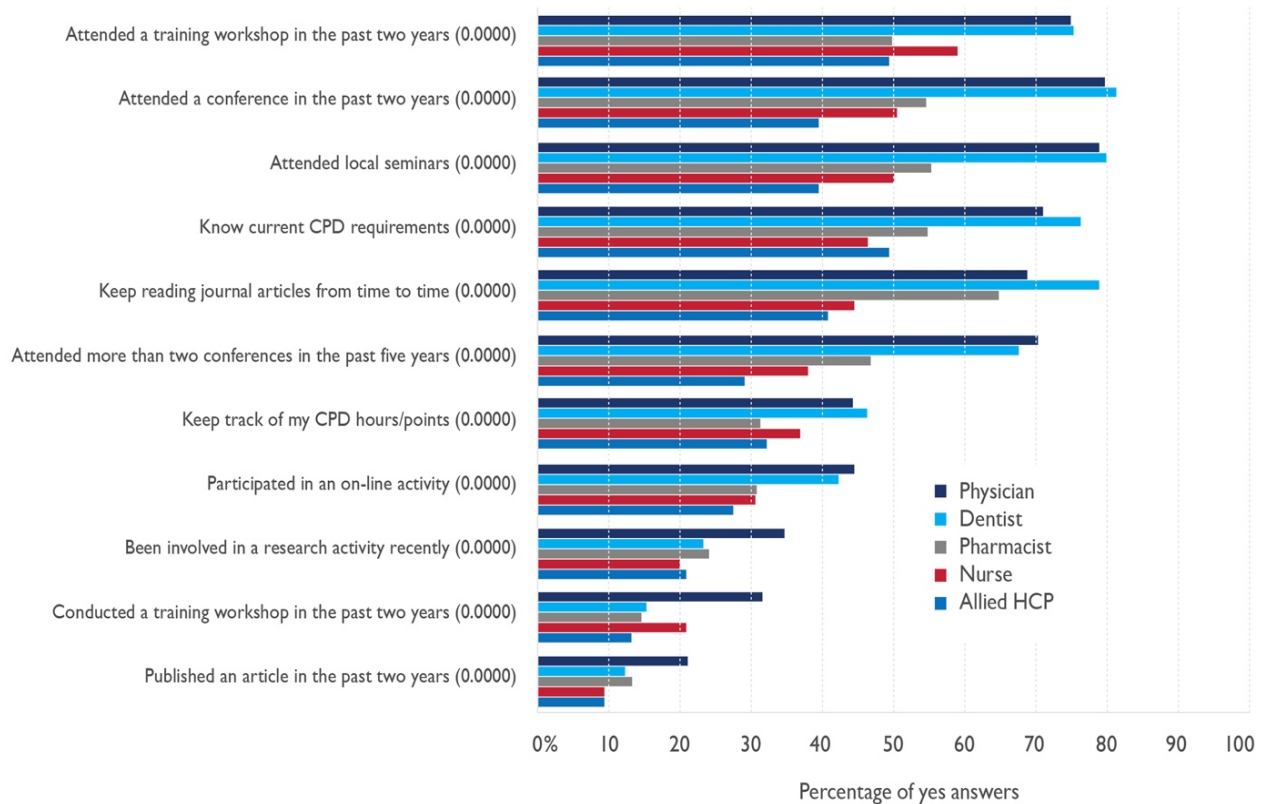


Table I: Predictors of CPD participation

Factor	Category	Coefficient	
(Intercept)		1.24	0.000
Years of Experience		0.02	0.020
Education	BA	0.49	0.005

	Master	1.46	0.000
	Ph.D	1.19	0.125
Health sector	Private	0.49	0.008
	University hospital	0.12	0.623
	RMS	1.07	0.000
Profession	Dentist	0.80	0.065
	Pharmacist	-0.67	0.039
	Nurse	-0.91	0.004
	Allied HCP	-1.38	0.000
Country of graduation	Arab Country	0.97	0.031
	East Europe	0.69	0.156
	West Europe	14.49	0.981
	USA	14.66	0.994
	Other	14.64	0.984
R-squared = 0.143			

Figure 3. Percentage of participants current practices by profession. Numbers in parentheses are p-values for testing significance of differences among professions



Motivation

Figure 4 and Figure 5 show the motivation for participation in CPD by the health sector and profession. Personal interest and career progression were the two most common motivators to participate in CPD among all respondents with 87.1% and 87% in agreement, respectively. Interview findings converge with the questionnaire results on several motivators. For example, healthcare practitioners in RMS hospitals explained that there was a clear policy that tied engagement in CPD activities to promotion (career progression) and other incentives. It was noted that promotion required a certain number of CPD credits to be acquired. One of the participant quotes illustrates this:

“When a doctor becomes board certified, his title becomes Assistant Specialist. After two years, he must complete 150 continuous teaching hours to obtain the title of Specialist, attend four internal conferences, and publish three scientific papers one of which must be published as an original article. From a Specialist to a First Specialist, it is necessary to complete 200 training hours, participate in five national or international conferences, and publish four scientific papers provided that one of them is an original article in the Royal Medical Services Scientific Journal. From First Specialist to a Consultant they need to complete 300 hours as a participant or a lecturer. These hours vary among medical cadres.” (Director, RMS hospital)

Personal interest, performance review, and mandated CPD were also asserted by both key informants and HCPs as motivators to practice CPD as illustrated in the following quotes:

“The most important factor is personal desire. If the person wants to develop themselves there isn’t a reason that stops them. There are a million ways other than management approval; you have the internet which is full of research, you can reach the information you need easily not like the old days. In the workplace you can also reach the information you want.” (Allied Health Professional, university hospital)

In health organizations, [CPD] plans should be linked to the annual assessment or the annual increase. The administration should provide incentives and be encouraging. For example, if you are required to take two courses during the year; one could be in your field of expertise and the other in another field to improve a general skill like a computer course about medical records. You should not get promoted or receive incentives from your evaluation if you did not attend both courses. Incentives could be financial incentives...” (Allied health professional, university hospital)

“I think that to be able to implement CPD it must be mandated as compulsory for workers in the health sector to participate in conferences, workshops and specialized seminars in their field of work...” (Director, university hospital)

The lowest motivators were a national policy and department/section policy with 60.7% and 63.5% in agreement, respectively. Figure 5 shows a significant relationship between participants’ responses to the motivations section and their profession type for all motivators except collecting CPD points and reflection on practice motivators. Physicians were most likely to be motivated by career progression, dentists by personal interest, and nurses by appraisals.

Figure 4. Summary of participants motivations to practice CPD by health sector. Numbers in parentheses are p-values for testing differences among health sectors

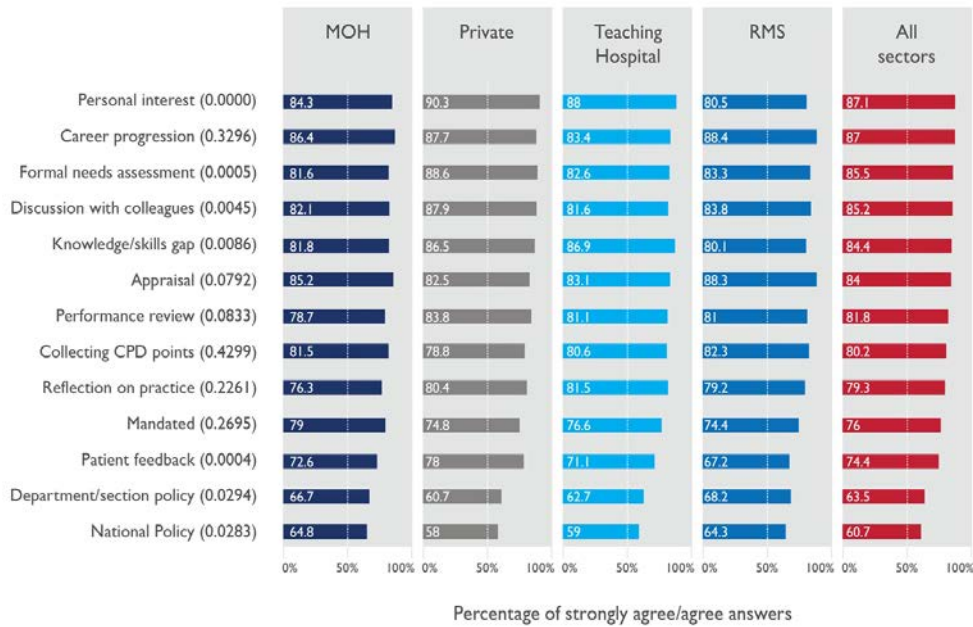
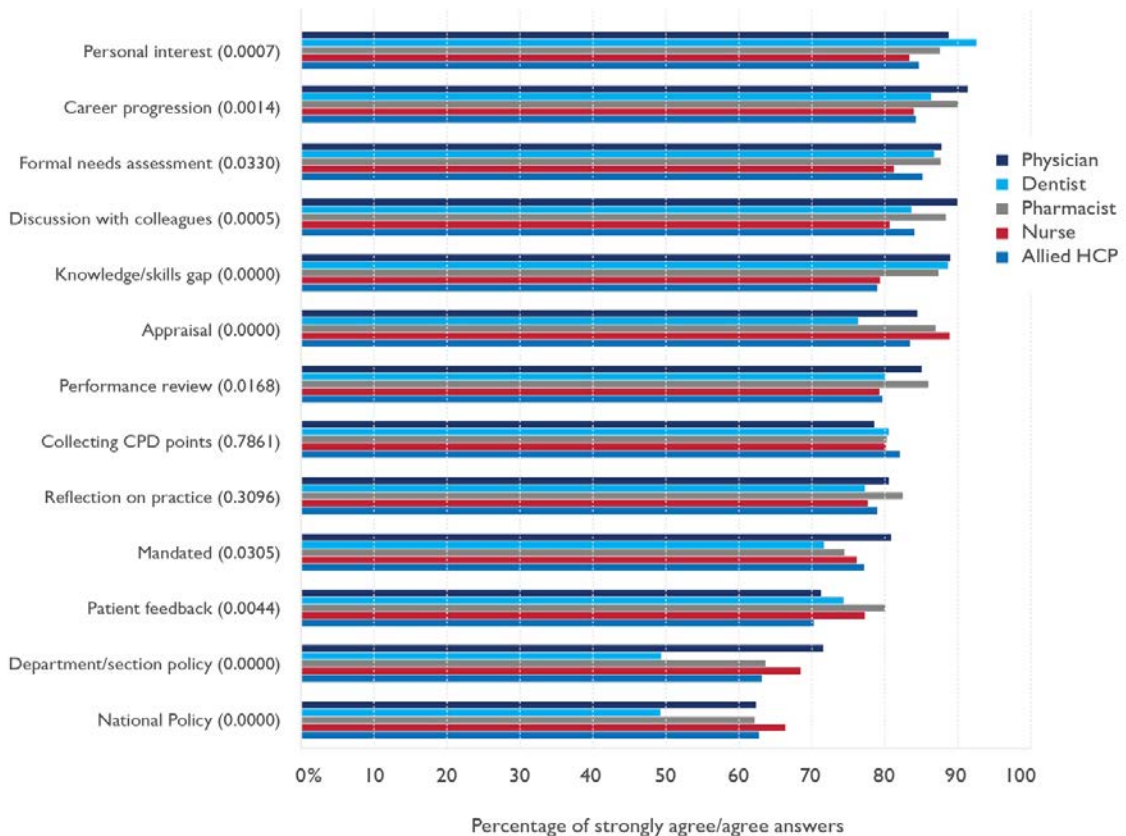


Figure 5. Summary of participants motivations to practice CPD by profession. Numbers in parentheses are p-values for testing differences among professions



Attitudes towards CPD

Figure 6 and Figure 7 below show levels of agreement (Strongly Agree/Agree proportion of responses among participants) with statements about the attitude towards CPD participation. Results indicate a highly positive attitude towards CPD. Of all respondents, 92% agreed that “CPD keeps me up-to-date” while 83% agreed that they would participate in CPD even when it was not mandatory. Similarly, almost all interviewed key informants and HCPs from different sectors agreed that CPD keeps them up-to-date:

“Of course, it [CPD] has a great impact in the future with respect to keeping pace with the existing science, papers, and scientific research at the medical level and developments in the science of medicine, nursing, or midwifery. There are many things that the professional should keep up-to-date with.” (Director, the MOH)

However, results in Figure 7 shows some differences in the agreement level among participants from different professional cadres to statements about motivation to participate in CPD. For example, 88% of nurses agreed that they were motivated to participate in CPD because they feel more respected by peers and supervisors because of increased knowledge whereas this was only the case for 76% of allied healthcare professionals.

Figure 6. Summary of participant's attitudes toward CPD by health sector. Numbers in parentheses are p-values for testing differences among health sectors

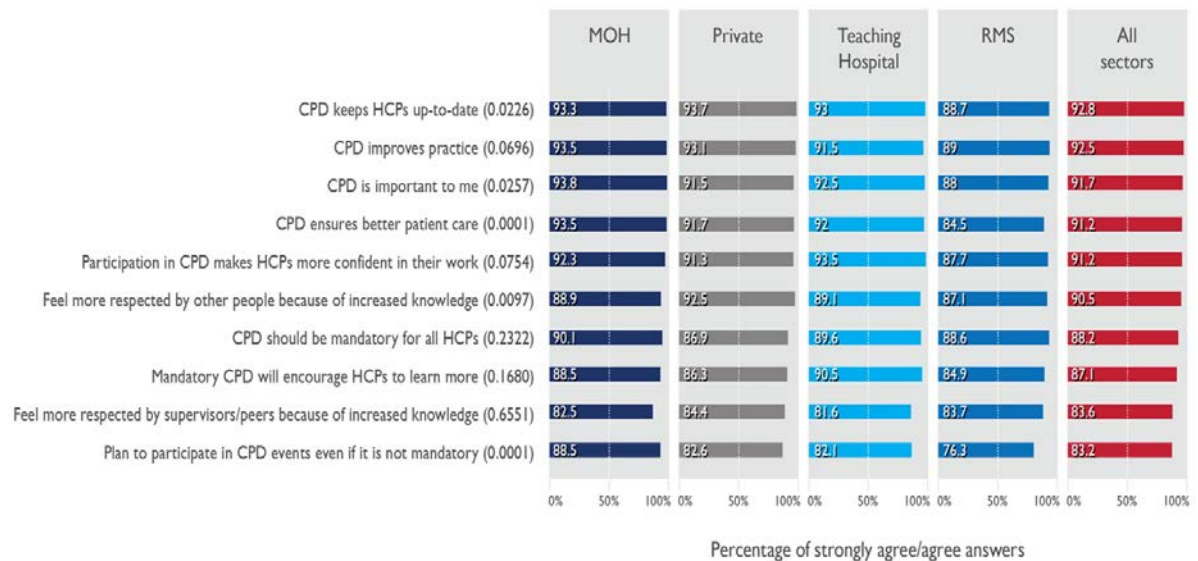
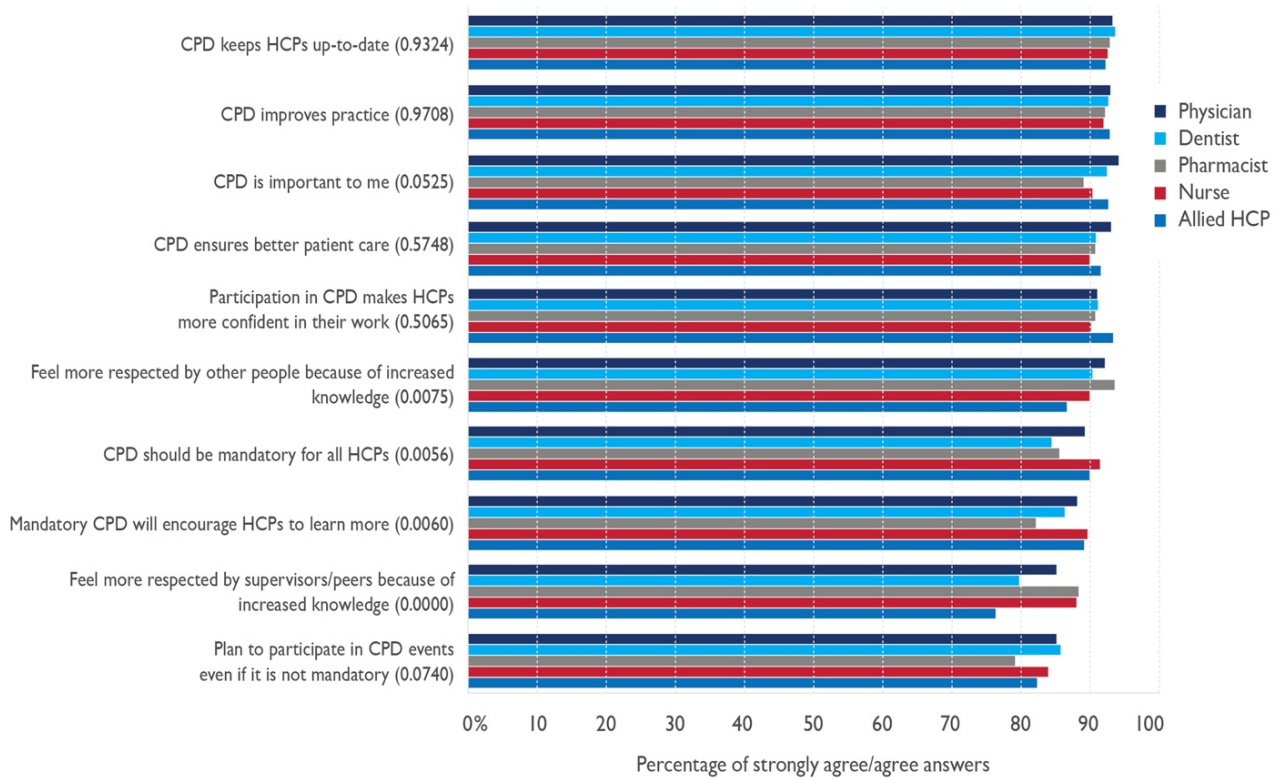


Figure 7. Summary of participant’s attitudes toward CPD by profession. Numbers in parentheses are p-values for testing differences among professions



CPD Impact

A summary of participant’s views with respect to the impact of CPD by the health sector and profession are shown in Figure 8 and Figure 9 below. Results indicate that participants have generally experienced a positive impact of CPD on their career and work practices. Participants indicated that the highest impact was on enhancing their knowledge and practical skills while they were less inclined to indicate that CPD had improved their relationship with colleagues or satisfied their learning ambitions.

Almost all interviewed key informants and HCPs from different sectors agreed that CPD improves their practice and patient services:

“Conferences and other CPD activities keep us informed of updates and developments in our fields and this affects our clinical practice.” (Pharmacist, RMS hospital)

“It [CPD] affects the performance of each employee differently. For example, if I develop my skills in the area of scientific information, I am able to advise doctors on the latest developments with respect to specific medicines because I would have more up-to-date knowledge in this area compared to the doctor. If I attend courses to develop my skills on the administrative side, I can organize my administrative work. This would enable better performance; the outcome would be better and patient services would be better.” (Pharmacist, University hospital).

Pharmacists indicated the strongest level of agreement that CPD had changed their attitudes while dentists had the lowest agreement at 81.3% and 78.2%, respectively. Generally, physicians showed high levels of agreement with respect to the positive impacts of CPD on their careers.

Figure 8. Summary of CPD impact by health sector. Numbers in parentheses represent p-values for testing differences among health sectors

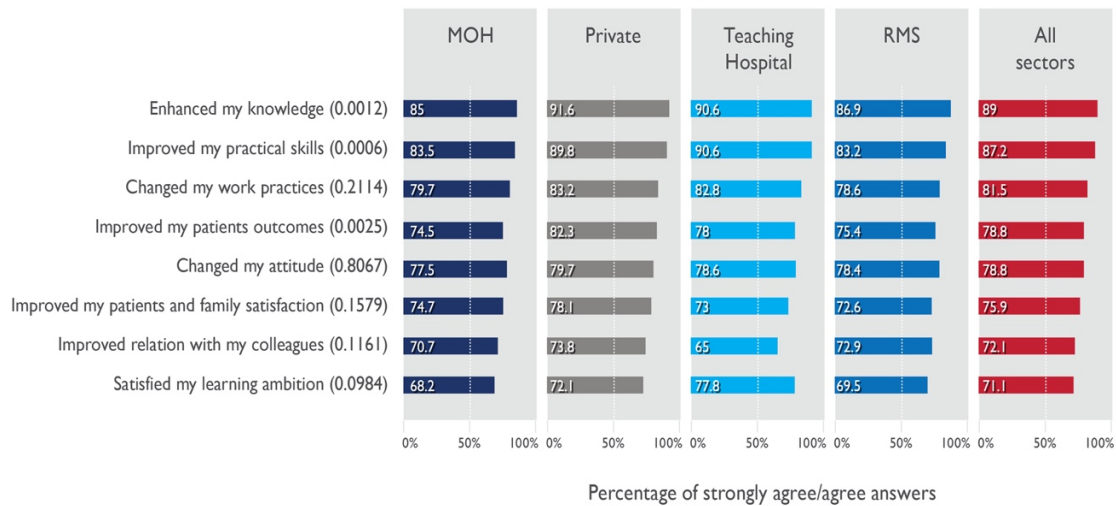
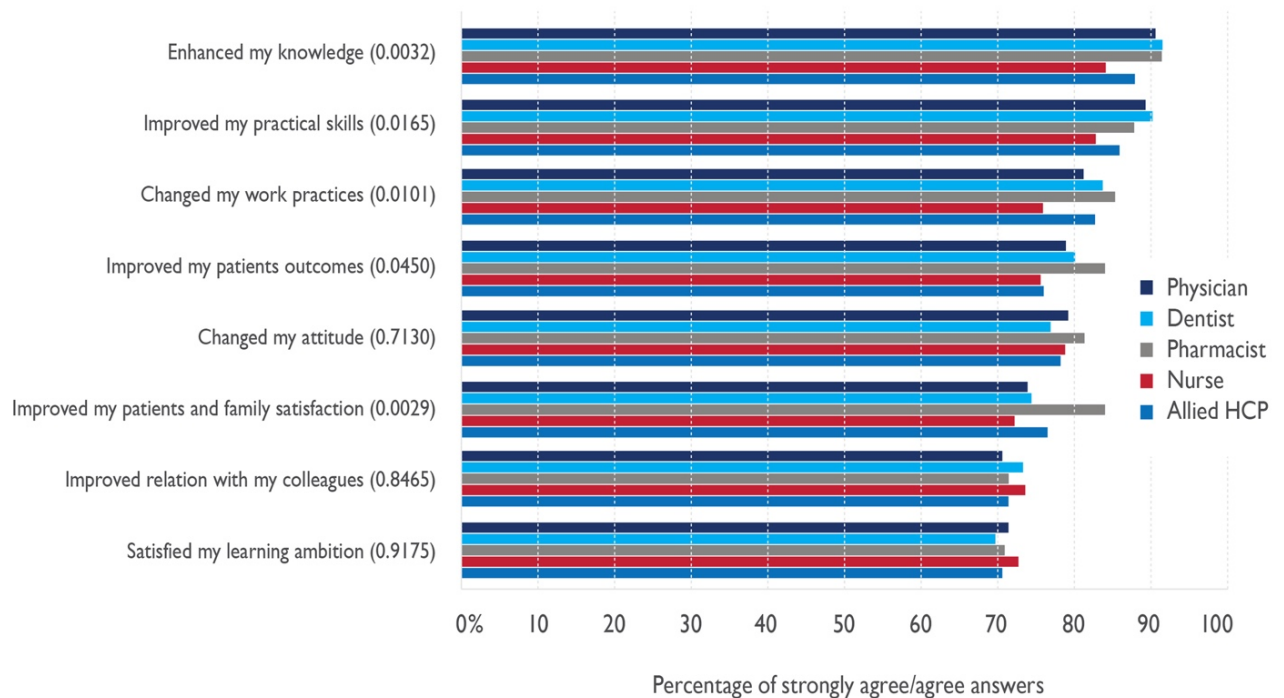


Figure 9. Summary of CPD impact by profession. Numbers in parentheses represent p-values for testing differences among professions



Several respondents in the qualitative sessions commented on the effectiveness and quality of CPD activities. While some HCPs in RMS hospitals were pleased with their CPD system as it

had significant financial incentives, they raised concerns about its effectiveness. For example, one nurse stated that:

Continuing education programs for the purpose of technical classification are positive to improve technical classifications. However, attendance is only for classification and not for the purpose of development and professional training.” (Nurse, RMS hospital)

Another nurse in a public hospital in the southern governorate emphasized how she did not benefit from CPD activities, and how those activities were only taken for the purpose of promotion. CPD activities also required HCPs to sleep away from their homes. Accordingly, it was more appropriate for young single nurses to attend even though they did not need such workshops.

Furthermore, the qualitative results complement the questionnaire results with respect to the effectiveness of CPD activities being hard to measure. Difficulties in measurement were noted for a range of reasons including that there was no overarching framework for CPD and CPD activities tend not to be organized systematically. Others perceived CPD effectiveness to have had little impact or benefit as this was also emphasized in the quantitative data by participants who disagreed that CPD has a positive impact on their knowledge or skills. Table 3 provides below further detail on qualitative results.

Table 3: Additional qualitative results on the effectiveness and quality of CPD

Theme	Illustrative quotes
Ineffective CPD programs	“CPD programs are ineffective, scattered, untrusted, and not evaluated. The content of [CPD programs] varies and their impact differs from one [CPD] program to another. There is no systematic approach to such [CPD] activities...” (Dean, Public university)
CPD programs of Little impact	“I believe that our CPD activities and results are limited and very weak. If we count the number of conferences for example, the number of conferences may be large, but this is not a part of continuing professional development because it is unfocused, not oriented and unstructured. I think that we should take into consideration the opinion of those that are affected by CPD, because they may have information and experience on what is needed in the health sector to build capacity. (Director, university hospital).”
Inability to judge the impact of CPD programs	“Very difficult to judge [the impact of CPD] because it does not follow specific regulatory and operational frameworks to enable one to judge whether CPD is having an impact on the quality of services and is improving health outcomes. In my opinion...it’s weak, fragmented and does not discriminate between orientation, in-service and

	continuous education clearly enough...it's not based on service needs, knowledge gaps and HCP competencies..." (General Director, council)
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Barriers towards CPD

Figure 10 shows barriers to CPD as respondents were asked to score on a Likert scale the importance of each barrier with 1 indicating very low importance and 5 indicating very high. As shown, staff shortages and workload, limited funds, lack of time, and event costs were ranked as the top barriers to CPD with an average score of 4 (high). Such top barriers were also emphasized by qualitative results. An allied health worker in a university hospital noted that as he was dedicated to his work, he gave up his lunch break (1 hour) during a training workshop to go back and continue his regular work. He felt guilty about attending training for the whole day as there was a severe staff shortage in the lab where he worked. He explained that this could negatively affect the effectiveness of CPD activities.

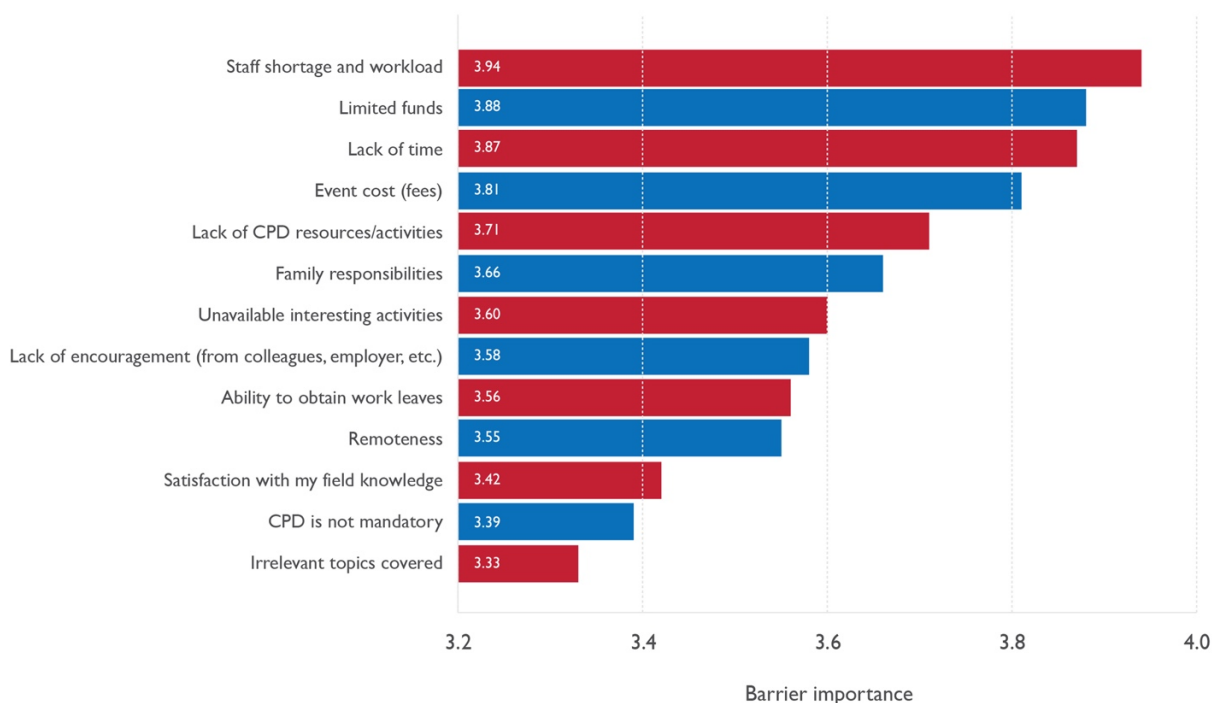
A physician in a governmental hospital in the north noted that the number of CPD activities offered was very limited to begin with and those that are offered are reserved for certain people. For example, she explained that a training workshop in her specialty which she needed was offered to someone else and she wasn't advised of the workshop being held until after it was completed. She said, *"I personally try to develop myself by looking for external funds for training; however, there are always challenges and hardships that prohibit you to go and develop yourself on your own such as not being able to take unpaid leave from work."*

Figure D.4 in Annex D.2 displays barriers to CPD by gender and it shows a similar ranking of barriers between males and females. Ranking of barriers by a participant's governorate (Figure D.5 in Annex D.2) shows similar patterns across governorates with family responsibilities and remoteness identified as key barriers by participants from Irbid. This barrier was also emphasized by the majority of interviewed HCPs from Irbid in the qualitative components of the study. A pharmacist from Irbid stated:

"It is sometimes about timing. Managers could nominate you but there's no time or possibility, especially if it is in the evening and outside [the governorate] in Amman. Personally, we spend a long time in the pharmacy and 90% of us in the pharmacy are females. Females can't control their circumstances, they have their houses and children to look after. Thus, participation in evening CPD activities can be difficult." (Pharmacist, university hospital)

A summary of CPD barriers by the health sector and by profession is shown in Annex D.1 in Table D.14 and Table D.15. The top barrier by profession was staff shortages and workload for physicians, nurses, and allied HCPs; event costs for dentists; and lack of time for pharmacists.

Figure 10. Barriers to CPD based on participant's responses



Similar barriers to participation in CPD were identified in the qualitative results with one exception, that there was unfairness in the nomination process of HCPs to attend CPD activities. A physician at a governmental hospital in the southern region advised that CPD activities such as conferences and workshops are only reserved for a specific group in the hospital. He noted that nomination for such activities is based on “wastah” (connections) rather than fairness, indicating a lack of transparency in the selection process for attendance at CPD activities. Table 4 below presents the qualitative results on barriers to CPD.

Table 4: Qualitative results on barriers to CPD

Key findings	Illustrative quotes
<p>Barriers related to the institutions:</p> <ul style="list-style-type: none"> - Staff shortage, high workload - Lack of financial resources 	<p>“Staff shortages reduce professional development. As a worker or a nurse or X-ray technician you are required to work over your capacity which either leads you to lose focus or forget things. You have a load you must complete without regard to the quality of care, the important thing is to finish it.” (Allied Health Professional, university hospital)</p> <p>“The main barrier is lack of financial support to attend activities.... the financial cost of a</p>

<ul style="list-style-type: none"> - Unsupportive culture of work environment - Ineffective administrators - Work pressure - Long work hours - Lack of policies that necessitate the engagement of HCPs in CPD activities - Injustice (wastah) in assigning HCPs to attend CPD activities 	<p>workshop is a barrier [in particular] why the individual should pay and why the institution should not bear the cost.” (Nurse, private hospital)</p> <p>“...the work environment has a big role in motivating employees to attend CPD activities.” (Nurse, university hospital)</p> <p>“Ineffective management is when your direct boss is unaware of the nature of your work and thus the skills required (to be developed) through CPD.” (Dentist, public hospital).</p> <p>“In the Ministry of Health, the official working week is six days a week for doctors. There are also shifts. This does not allow me to search or participate in such courses. Also, there is no justice in (nomination for CPD)” (physician, public hospital).</p> <p>“Another barrier is long work working hours from 8-4 pm.” (Dentist, public hospital).</p> <p>“There is nothing that mandates HCPs to be engaged in CPD activities...up until now engagement in CPD activities depends on the motivation of individuals; there is nothing that mandates him or her to be engaged in such activities.” (General Director, Council)</p> <p>“There is no justice or even rules that govern the nomination of staff to attend CPD activities by institution.” (Physician public hospital)</p>
<p>Barriers related to HCPs:</p> <ul style="list-style-type: none"> - Family-work imbalance 	<p>“There are personal barriers of two types; first, the low awareness of the importance of</p>

<ul style="list-style-type: none"> - Low awareness of CPD importance - Lack of motivation - Unavailability of programs that are close to work place or living place - Lack of time; inability to leave practice for attending CPD activities 	<p>CPD; and second, factors related to one’s personal life- what is required from females inside and outside work is totally different from what is required of males. For example, married women are affected by the understanding of their husbands of the importance of CPD especially if they are not in the healthcare field. Husbands might not like their wives leaving their homes and children to travel to participate in CPD activities; this might create family conflict.” (Vice Dean, university)</p> <p>“There are personal barriers such as: not having the desire to learn; being busy with personal obligations; being undedicated to work, unavailability of CPD activities; and no incentives for engaging in CPD activities”. (Dean of college, university)</p> <p>“It is sometimes about timing, management could assign (you to the activity) but there's no time, especially if it’s in the evening and outside [the governorate in Amman].” (Pharmacist, university hospital).</p> <p>“There should be time within work days that is allocated to CPD activities and this should not be on weekends; the institution should also offer CPD programs” (Nurse, university hospital).</p>
<p>Barriers related to offered CPD activities:</p> <ul style="list-style-type: none"> - Limited CPD activities or offerings - Limited designated finances 	<p>“Currently, I think there are obstacles if [CPD] is not mandatory. . .The most important obstacle is financial, especially if the courses or workshops, whether inside or outside of Jordan, require funding and financial support. Another obstacle is that the time allocated for professional development is unprotected, which means it is at</p>

	<p>the expense of the employees' time (annual leave). I think that there should be dedicated time for the employee to attend such programs, perhaps one or two weeks throughout the year, which is not considered annual leave but rather continuing professional development. Another obstacle is that specialized seminars are not sufficiently available in Jordan. Many public conferences are held every year in all fields of medical, health sciences and auxiliary medicine, but they are unfocused and therefore, do not support continuing professional development endeavors. I think that there should be more effort in the convening of conferences to ensure that they are focused in their entirety on areas that serve the professional development of practitioners in this field." (Director, university hospital).</p>
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Almost all HCPs interviewed in the public sector indicated that they seek to be engaged in CPD activities largely for the sake of promotion as such activities are not supported by employers concerning cost or time away from work to participate. Similarly, HCPs in the private sector complained that engagement in external CPD activities is not supported by their employers due to cost and work load, and opportunities are limited largely to lectures or seminars held in hospitals. However, HCPs who work in other sectors indicated that CPD activities are available for staff who work in the private sector and are supported by private companies.

For the university hospitals, respondents noted that CPD activities were provided for staff especially in hospital settings. Moreover, several respondents indicated that opportunities for professional development at the university hospitals was better than that in private and public institutions. However, most of the HCPs interviewed at university hospitals raised concerns about limitations within CPD offerings particularly with respect to quality.

Almost all HCPs agreed that the RMS had the best CPD system. It was noted that within the RMS CPD was supported by management (whether inside or outside Jordan) and CPD was also incentivized by being closely tied to the promotion. Table 5 provides illustrative quotes regarding reported differences in CPD experiences and practices between healthcare sectors in Jordan.

Table 5: Difference in CPD practices and experiences between health care sectors

Healthcare Sector	Illustrative Quotes
Public hospitals	<p>“Here at the Ministry of Health when you are appointed as a specialist, you begin looking for courses yourself for promotion and points. Whereas in the RMS, the employee is aware of the courses that are suitable for them and how many hours of training is required. In addition, the promotion requires these courses to be undertaken and finding a suitable course takes time and the time must be taken from your annual vacation allocation. Even when you want to participate in conferences it is at the employee’s expense. He/She must use days of annual leave and is still required to finish tasks allocated to him. In other words, there is no motivation for employers to give employees time off to partake e.g. giving a day off, so you can do the training. I am currently going to be promoted to a special degree and this requires 100 hours of training...” (dentist, public hospital)</p> <p>“These programs (CPD programs) are not available. The last program I participated in was in 2013 outside of Jordan and I am the one who took initiative to partake. Since then, I haven’t attended any training courses, workshops or anything else that could develop me professionally.” (physician, public hospital)</p>
Private hospitals	<p>“Some programs are linked to general orientation, which is only for three days. After that, lectures are given according to the section where the nurse is assigned to. For example, in the Intensive Care Unit you should attend Advanced Cardiac Life Support and Basic Life Support, but these are considered requirements for more than the continuing development programs” (nurse, private hospital)</p> <p>“There are external courses every three or six months, which are applied for by the resident and payment is made personally.” (physician, private hospital)</p> <p>“In the private sector, each institution operates on its own, and there is no unified system. [When looking at CPD opportunities,] we hope for a unified system for all health institutions across the nation. i.e. Opportunities available for those in Al Karak would be the same as those in Amman; and opportunities for the specialty hospitals would be similar to those in the RMS.” (Nurse, remote public hospital)</p>
University hospitals	<p>“Real programs do not exist right now, so we need to improve the infrastructure and rebuild trust in the</p>

	system prior to building the system further. If we create programs without trust, no one will attend them.” (Physician, university hospital)
RMS hospitals	<p>“The institutions support attendance at CPD activities such as conferences but in the end it requires personal effort to travel abroad to attend such activities” (dentist, RMS hospital)</p> <p>“In the military health system, some (practitioners) attended the premature infants' course, the children's course and the ICU course at the full expense of the employer. While I attended a management course and paid 750 dinars and an intensive care course that cost 800 dinars. When I encourage the girls (nurses), they say that they prefer to use their vacations for a break rather than take a course. In addition, it is possible to attend these courses and gain nothing unless you attend them outside Jordan. The RMS incentives after 10 years may reach 1,000 dinars. But we get two points on the incentives, i.e. 10 dinars.” (Nurse, remote public hospital)</p> <p>“The differences are clear: in the RMS (in all health sectors) large numbers have an equal opportunity to participate in conferences and courses, but this is not the case in other places.” (Nurse, remote public hospital)</p>

Results from the KIIs and FGDs as shown in Table 6 below revealed several enablers to CPD practice in addition to the absence of the presented barriers in the above section.

Table 6: Qualitative findings on enablers to CPD practice

Key Findings	Illustrative Quotes
Presence of CPD programs	“...to have [CPD programs] available- this is the most important thing in Jordan because it exists sporadically and is scattered, disorganized and unmethodical.” (dean of college, university).
Activities being offered close to workplace or living place,	“There is the geographic factor; most conferences are held in Amman or the Dead Sea. Therefore, it is easier for people who live in Amman to go for such activities compared to HCPs who live in other governorates. For me, it is very difficult to travel to Amman to attend a CPD activity after my work duties.” (dentist, RMS hospital)
Activities being conducted	“[CPD programs] should be run by highly respected and reputable

by qualified persons and in non-traditional ways	scientific bodies...they should also be available in non-traditional ways. For example, they could be offered online rather than in a class which would make them more accessible.” (Nurse, university hospital).
Providing protected time to attend CPD activities	“CPD should be offered through work time and not at weekends and the institution should offer such programs to its employees.” (nurse, university hospital).
Providing free transportation to places where CPD activities are held	“Transportation should be provided by institutions to places where CPD activities are conducted.” (dentist, public hospital) “Facilitate the attendance of the employee at courses, such as giving leave to the employee on the next day if the courses are outside official working hours. This would be an incentive to participate in the development program in addition to providing transportation allowance.” (Allied health professional, public hospital)
Supportive administration; having a culture and an environment that value CPD	“Supportive environments and administrations, motivating employees and also an internal desire of employees to participate in CPD activities.” (nurse, university hospital)
Providing incentives whether financial or work-related promotion	“...CPD has to be obligatory and tied to incentives and work promotion as it is in the RMS.” (nurse, university hospital)

Current CPD Providers

Participant’s responses regarding their primary CPD providers are shown in Figure 11 and Figure 12 below summarized by health sector and profession, respectively. Results in Figure 11 indicate that e-learning and other internet sources are the two biggest contributors to CPD followed by college conferences and drug companies. Conferences of the professional councils (JNC and JMC) were the least significant contributor to CPD. The same ranking of providers was generally observed among all health sectors except for the RMS where drug companies provided the least of their CPD activities. Results in Figure 12 indicate that e-learning is the most important contributor to CPD for all professions, except dentists where the biggest providers of CPD were reported as specialty associations and college conferences. Drug companies were reported as the second top provider of CPD for pharmacists while they were the lowest provider of CPD to allied HCPs. It is important to note that significantly different contribution levels of these contributors were shown among healthcare sectors and among professions. For example, drug companies were selected as a contributor mostly by physicians, dentists, and pharmacists which seems to be oriented toward professions that promote pharmaceutical products. College conferences were mostly selected by physicians and dentists as contributors for their CPD.

Figure 11. Summary of CPD providers by health sector. Numbers in parentheses represent p-values for testing differences among health sectors

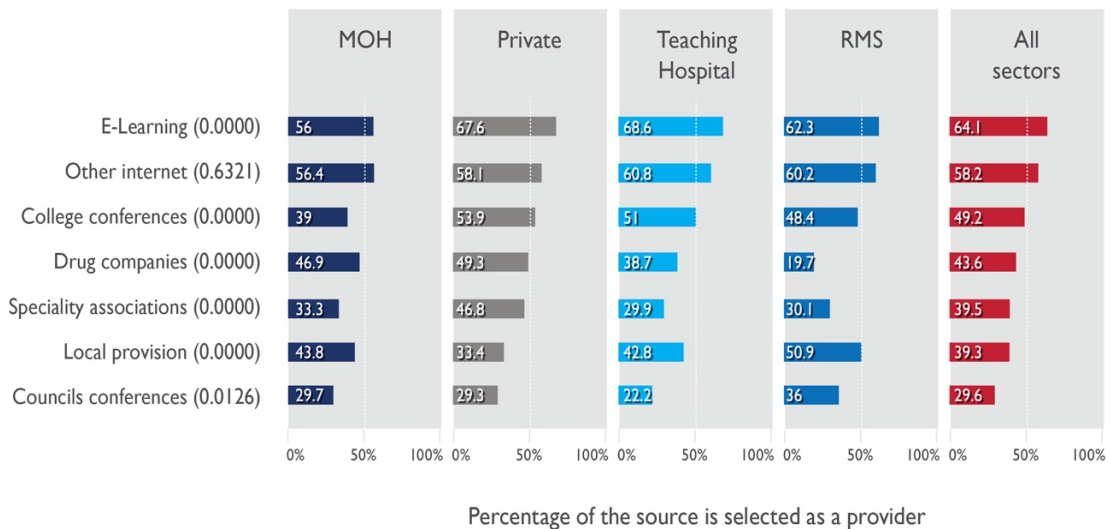
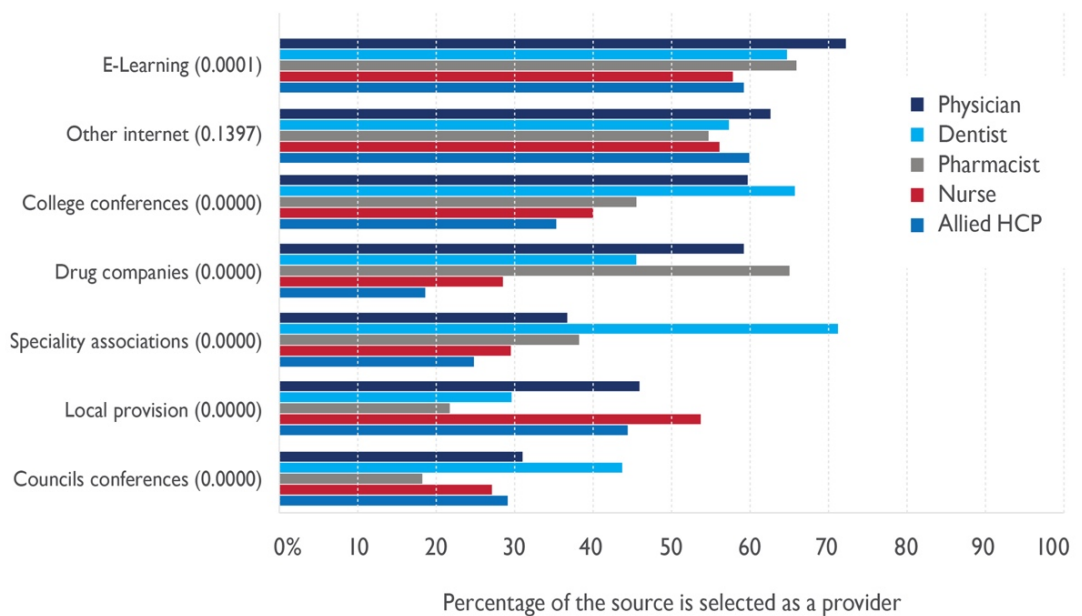


Figure 12. Summary of CPD providers by profession. Numbers in parentheses represent p-values for testing differences among professions



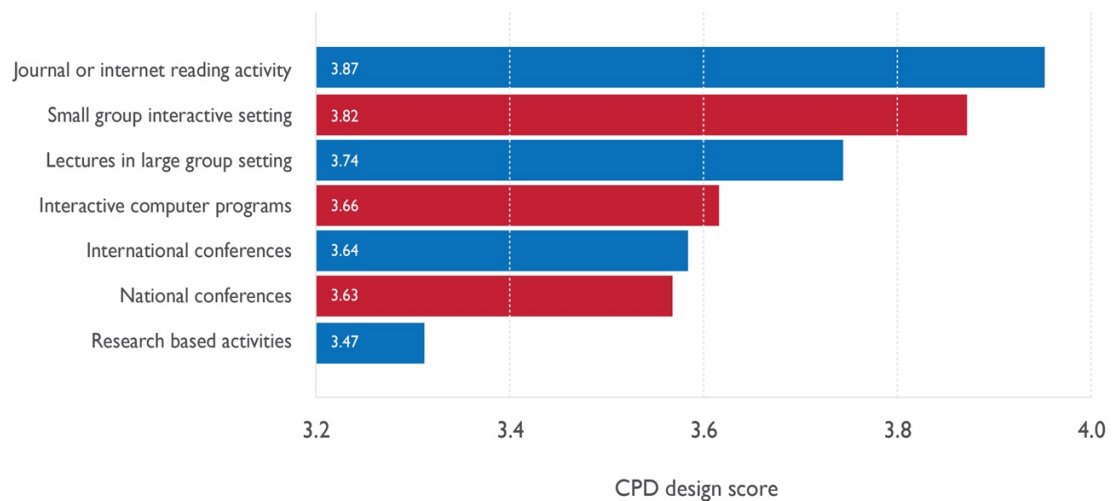
CPD design

A summary of participant’s willingness to participate in CPD activities by activity type is shown in Figure 13. The results indicated that journal or internet reading had the highest score followed by small group interactive settings and lectures in large group settings. Research-based

activities were the least favored. Broken down by gender (Figure D.6 in Annex D.2), international conferences was among the top three activity types for men while it was one of the least favored by women who preferred journal and internet reading. This difference between male and female respondents regarding attendance of conferences is also emphasized in qualitative data as represented by the following quote:

- *“There are personal barriers of two types; first, the low awareness of the importance of CPD; and second, factors related to one’s personal life- what is required from females inside and outside work is totally different from what is required of males. For example, married women are affected by the understanding of their husbands of the importance of CPD especially if they are not in the healthcare field. Husbands might not like their wives leaving their homes and children to travel to participate in CPD activities; this might create family conflict.” (Vice Dean, university)*

Figure 13. Summary of participant’s willingness to participate in CPD by design type



The interview findings clarified more issues about the format of CPD activities. When asked about the CPD systems or methods that are used in the healthcare sector in Jordan, some key informants indicated the absence of a comprehensive model for CPD delivery; others felt that CPD was limited to individual conferences or workshops and not conceived in a holistic sense. Illustrative quotes are presented in Table 7 below.

Table 7: Illustrative quotes on CPD design

Theme	Illustrative Quotes
The absence of CPD models	<p>“There are no models. However, I think the Jordan Medical Council is interested in such things.” (Director, MOH)</p> <p>“The current frameworks/models/initiatives are fragmented and</p>

<p>CPD models as forms of providing CPD activities</p>	<p>are not based on regulatory frameworks except for a few professions and areas. Dentists have created a bylaw which did not go through to implementation phase.¹ Other sectors have their own training programs where they are the provider and certify the training. However, this is an area of chaos and concern for regulators and quality assurance. Councils and some of the associations are mandated to do continuing education.” (General Director, council)</p> <p>“Our models are still limited to attending a lecture, a workshop or a scientific seminar. . . while the concept of continuing professional education is a more comprehensive concept than just a lecture, a seminar or a workshop. The continuing professional education activities are supposed to be driven by the person himself and he himself decides on the education that contributes to the development of his professional and technical skills. We still do not see people interested in online education or training. Until now, we only have activities that are related to the persons specialization, while continuing professional education does not necessarily have to be only in the field of specialization...; it can be in the field of marketing, leadership or teamwork... Most of the activities we adopt are related to courses, workshops and conferences only.” (General Director, Council)</p>
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CPD Necessity

Table 8 below summarizes participant’s ratings of CPD necessity by health sector and profession. Results show a high level of agreement amongst all participants on the necessity of CPD for their careers at an overall rating of 8.57 out of 10. Agreement was more moderate with respect to making CPD mandatory with an overall rate of 7.81 out of 10. A higher agreement on making CPD mandatory was observed when the cost was low, however.

Table 8: Summary of participant’s responses to CPD necessity by the health sector and profession. Reported numbers are average rating scores out of 10 and standard deviations appear in parentheses.

Health Sector							
Variable	Profession	MOH	Private	University hospital	RMS	Total	P-value
CPD is necessary for your	Physician	8.64 (1.67)	8.72 (1.44)	9.42 (0.87)	9.1 (1.23)	8.82 (1.47)	0.0040

¹ The new relicensure bylaw includes dentists and, while the CPD instructions dictate that the Jordan Medical Council (JMC) has purview over the dentists’ CPD, the JMC and the Jordan Dentists Association (JDA) have engaged in preliminary discussions where the JDA will serve as initial reviewers of CPD credits for their members and then send a recommendation to the JMC for final approval.

Health Sector							
Variable	Profession	MOH	Private	University hospital	RMS	Total	P-value
practice	Dentist	9.02 (1.13)	8.72 (1.6)	8.88 (1.36)	8.76 (1.52)	8.77 (1.52)	0.6040
	Pharmacist	9.37 (1.51)	8.48 (1.95)	7.9 (1.64)	7.71 (1.11)	8.53 (1.9)	0.0064
	Nurse	8.41 (1.89)	8.38 (2.09)	8.57 (1.89)	7.94 (1.85)	8.31 (1.95)	0.1767
	Allied HCP	8.3 (1.8)	8.36 (2.19)	8.82 (1.6)	8.5 (1.93)	8.45 (1.93)	0.2616
	Total	8.59 (1.74)	8.55 (1.84)	8.82 (1.56)	8.45 (1.76)	8.57 (1.78)	0.0908
	P-value	0.0013	0.1392	0.0035	0.0006	0	
CPD should be mandatory	Physician	7.88 (2.1)	8.08 (2.14)	7.98 (2.43)	7.7 (2.24)	7.94 (2.17)	0.6632
	Dentist	8.04 (2.22)	7.23 (2.77)	8.75 (1.73)	6.93 (2.37)	7.38 (2.66)	0.0254
	Pharmacist	8.74 (2.05)	7.41 (2.63)	7.19 (2.56)	8.29 (1.38)	7.55 (2.59)	0.0106
	Nurse	7.97 (2.07)	7.9 (2.24)	8.14 (2.07)	7.64 (2.14)	7.89 (2.14)	0.5285
	Allied HCP	8.4 (1.76)	7.86 (2.28)	8.55 (1.82)	8.12 (2.27)	8.21 (2.07)	0.0742
	Total	8.11 (2.03)	7.59 (2.53)	8.2 (2.13)	7.77 (2.23)	7.81 (2.34)	0.0080
P-value	0.043	0.0012	0.0775	0.1088	0		
CPD should be mandatory at low cost	Physician	7.87 (2.35)	7.88 (2.58)	8.38 (2.36)	7.98 (2.36)	7.94 (2.44)	0.6153
	Dentist	8.49 (2.27)	8.48 (2.22)	8.31 (1.85)	8.83 (1.98)	8.5 (2.19)	0.8518
	Pharmacist	8.63 (2.2)	7.97 (2.58)	8.38 (2.16)	8.57 (1.27)	8.07 (2.52)	0.3512
	Nurse	7.98 (2.41)	8.27 (2.17)	8.48 (1.99)	7.91 (2.27)	8.11 (2.26)	0.3661
	Allied HCP	8.44 (1.77)	8.35 (2.19)	8.74 (1.74)	8.13 (2.44)	8.39 (2.07)	0.2649
	Total	8.15 (2.23)	8.18 (2.4)	8.53 (2)	8.1 (2.31)	8.19 (2.31)	0.1746
P-value	0.0623	0.0287	0.8344	0.4047	0.0018		

The interview findings also validated the importance and necessity of CPD. Similarly, the interview findings converged with the questionnaire results on the importance of making CPD mandatory. However, it was noted by some participants that CPD should be financially sponsored by institutions although others felt that HCPs should bear the burden of some of this cost. The qualitative results also indicated the importance placed on providing incentives for those who complete CPD requirements. Illustrative quotes on CPD necessity are presented in further detail in Table 9 below.

Table 9: Illustrative quotes on CPD necessity and funding

Theme	Illustrative Quotes
Necessity of CPD	“Every day there are new things in our field in pharmacology. Everyday new medicines are in the market. Therefore, we must update ourselves on new things continuously.” (Pharmacist, university hospital)
Mandated CPD	“CPD should be linked to bonuses, promotions and practice. If it is not linked to a binding law that gives it significant weight it will be meaningless.” (Dean of college, university)
Supported CPD activities by institution	“CPD should be supported by institutions.” (Physician, remote public hospital)
HCPs having a share in funding CPD	“I think doctors, nurses, and pharmacists should contribute [to CPD funding]. However not a significant amount that would deter their participation (i.e. they should pay a small fee) because when an individual pays they are keen to make sure they get something in return. That way they are not just attending a course to get a certificate. In a lot of those courses no one shows up, or they go for the opening part of the day and then attendance gradually decreases after lunch.” (General Director, council)
Providing incentives for HCPs who adhere to CPD policies	“In developed countries, when you pass a number of specific courses and reach a certain level, you undergo an exam and as a motivational incentive you could be sent on a vacation, you and the family for a week. This is a good motivation.” (Dentist, university hospital)
Funding programs	“I think all institutions need to be involved in funding, as a form of common funding. All academic institutions, health institutions, the RMS, the private sector and unions boards are all possible funders. . . They must ensure implementation [of any funding scheme] follows a certain methodology and regulations. Everyone must participate as it cannot be funded on its own, and it cannot be funded by the state.” (Dean of college, university)

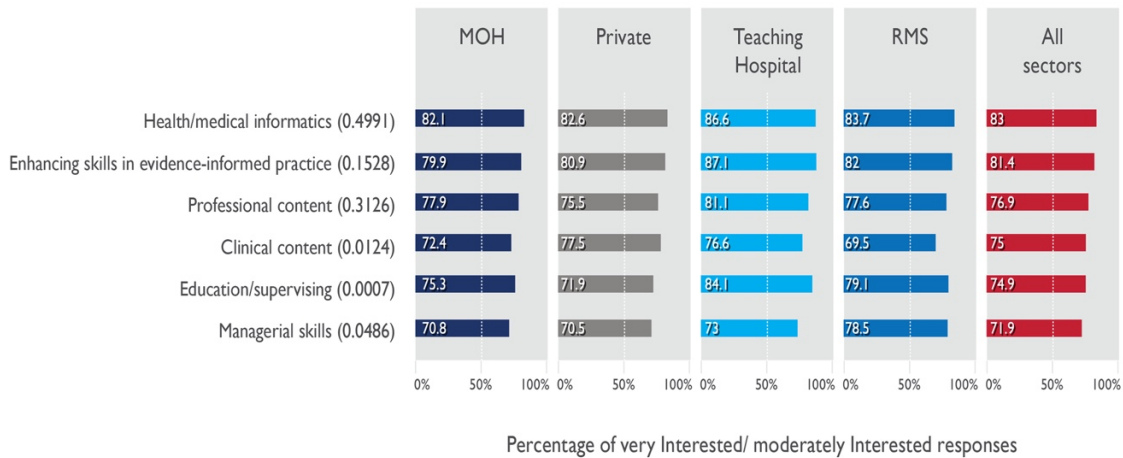
CPD Content

Figure 14 and Figure 15 summarize CPD topics that interest HCPs by health sector and profession. The majority of participants are interested in “health/medical informatics” and “enhancing skills in evidence-informed practice” while “managerial skills” had the lowest levels of interest.

Figure D.7 through Figure D.10 in Annex D.2 show learning interests by gender, governorate, age group, and years of experience, respectively. Women generally expressed more interest in

all topics than men, especially in “managerial skills” (74% for females and 69.9% for males) and “professional content” (79% for females and 75% for males). Participants from Al-Karak governorate expressed higher interest in the suggested topics than participants from other governorates. As expected, participants with less than five years of experience tended to be less interested in “managerial skills” and “education/supervising” topics and showed more interest in the clinical content topics.

Figure 14. Proportion of very and moderately interested responses for CPD topics summarized by health sector. Numbers in parentheses represent p-values for testing differences in response among health sectors



Assuming a four-point Likert scale for interest in CPD topics (1 for not interested and 4 for very interested), a summary of participants interest rates are summarized in Table 10 and Table 11 by healthcare sector and profession, respectively. Health/medical informatics received the highest interest rate of all topics and was identified as the most important topic by pharmacists and allied HCPs. Dentists have identified clinical contents as their most important topic.

A detailed summary of participant’s interest areas by health sector and profession are shown in Table D.18 and Table D.19 of Annex D.I. Results show that participants from university hospitals have higher interest than other sectors in “health/medical informatics” (86.5% were moderately and very interested in this topic). Similarly, participants from private and university hospitals have shown higher interests in “clinical contents” than participants from other sectors (77.5% and 76.7% were moderately and very interested in clinical contents for private and university hospitals, respectively).

By contrast, participants from the RMS and the private sector indicated a high level of interest in CPD which focuses on “professional content”.

Figure 15. Proportion of very and moderately interested responses for CPD topics summarized by profession. Numbers in parentheses represent p-values for testing difference in response among professions

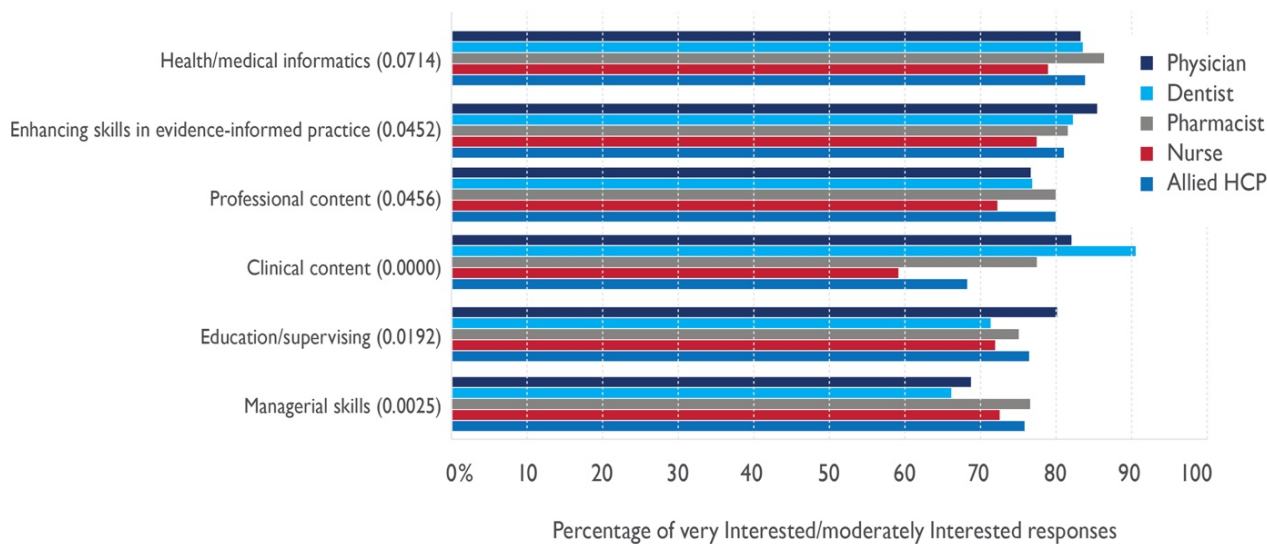


Table 10: Summary of participants interests in CPD topics by health sector assuming a four-points Likert scale

	MOH	Private	Teaching hospital	RMS	All Sectors	P-value
Clinical content	3.01	3.15	3.18	2.94	3.09	0.0007
Professional content	3.12	3.13	3.15	3.17	3.14	0.8669
Education/supervising	3.08	2.97	3.17	3.16	3.05	0.0012
Enhancing skills in evidence-informed practice	3.23	3.17	3.36	3.21	3.21	0.0436
Managerial skills	2.95	2.94	3.01	3.13	2.98	0.015
Health/medical informatics	3.23	3.28	3.34	3.26	3.27	0.4089

* Four-point Likert scale includes: 4 = Very Interested, 3 = Moderately Interested, 2 = Slightly Interested, and 1 = Not Interested.

Table 11: Summary of participants interests in CPD topics by profession assuming a four-point Likert scale

	Physician	Dentist	Pharmacist	Nurse	Allied HCP	All Professions	P-value
Clinical content	3.25	3.52	3.12	2.74	2.86	3.09	0.0000
Professional content	3.13	3.06	3.23	3.03	3.22	3.15	0.0024
Education/supervising	3.16	2.91	3.01	3.03	3.1	3.05	0.0012
Enhancing skills in evidence-informed practice	3.33	3.22	3.18	3.12	3.2	3.21	0.0111
Managerial skills	2.91	2.82	3.05	3.05	3.04	2.98	0.0004
Health/medical informatics	3.25	3.23	3.36	3.2	3.31	3.27	0,0353

* Four-point Likert scale includes: 4 = Very Interested, 3 = Moderately Interested, 2 = Slightly Interested, and 1 = Not Interested.

Information ascertained from the KIs and FGDs supported the results from the questionnaire with respect to CPD content but also included some additional insights with respect to complementary skills (communication skills, leadership, ethics, health economy) that HCPs were interested in strengthening. Interview findings also addressed concerns about the inadequacy of CPD programs and the limited offering of CPD activities. Table 12 below presents further detail.

Table 12: Illustrative quotes on CPD content

Illustrative Quotes	
Knowledge and skills in specialty area	“I prefer to attend something in my area of specialization. There are many programs in the field of human development and communication, but I tend to focus more on my area of specialization.” (Pharmacist, RMS hospital)
Complementary Skills	<p>“There are general courses that everyone in the health sector should attend, such as professional ethics and communication methods in addition to things related to specialization and scientific and technological developments.” (Physician, public hospital)</p> <p>“We need to know about the health bylaws so that we know what our rights and obligations are and also about the code of ethics.” (Nurse, university hospital)</p> <p>The CPD programs should be accessible and focus on things that are evidence-based particularly as people hate to change things. However, if they know it is evidence-based, they will adopt it.” (Nurse, the RMS)</p>
A limited offering of CPD activities	“These [CPD] programs are limited; their numbers are few and are only supported by a few.” (Dean of College, university)

Suggested improvements to policies and delivery of CPD

Kills and FGDs provided insights and suggestions with respect to policies that need to be developed to institute a national system of CPD in Jordan. Mandating polices that necessitate the completion of CPD requirements for re-licensing of HCPs was suggested as a priority. Almost all key informants and some of the HCPs suggested that CPD is made compulsory. Many respondents also recommended that compliance policies be tied to re-licensing of HCPs. Further, HCPs emphasized the importance of policies related to:

1. Protected time for attendance at CPD activities
2. Financial rewards, promotion, and salary increases to incentivize CPD participation
3. Fairness and justice in the inclusion of all employees in CPD
4. CPD activities free of charge

Table 13 presents further details on suggested improvements to CPD policy and delivery.

Table 13: Qualitative results on suggested improvements to policies and delivery of CPD

Suggested improvements	Illustrative Quotes
Mandating CPD for HCPs	<p>“The most important point is mandating continuing medical education. . . The easiest way to do this is to link it to licensing. Most of the professional licenses are now being renewed. Why not apply [mandatory CPD] to health licenses?” (General Director, council)</p> <p>“To be mandatory and to take into account that the governorates of the south and the rest of the governorates should be treated like Amman in terms of ensuring that they have the necessary capabilities and competencies.” (Nurse, remote public hospital)</p>
Tying Compliance Policies to relicensing of HCPs	<p>“This does not require policies but requires legislation. For example, after five years of practicing if you do not meet a certain number of hours of training, then you cannot re-license” (Director, private hospital).</p>
Having accredited bodies for CPD activities	<p>There must be a general framework that clarifies the roles of all stakeholders in continuing medical education. There must be legislation identifying a specific body to accredit programs and identify where the database is housed. The legislation should outline who is responsible to ensure that there is no kind of manipulation and chaos. In this regard, it’s important to distinguish between health professions in relation to the number of hours of vocational education required of doctors, pharmacists, dentists, nurses and health laboratory workers.” (General Director, council)</p>
Providing incentives or benefits for HCPs based on engagement in CPD activities	<p>“CPD should be linked to bonuses, promotions and practice. If it is not linked to a binding law that gives it significant weight it will be meaningless.” (Dean of college, university)</p>

	<p>“Activating the policies related to the system of motivating cadres ... “(Allied health professional, public hospital)</p>
<p>Allowing flexible working hours Establishing institution units for CPD with clear functions and updated programs Conducting research focusing on needs and approaches</p>	<p>[A successful CPD system needs] workplace policies including flexible working hours, institutional creation of units for CPD with clear functions and updated programs, policies for research which focus on needs and approaches, and policies for funding....” (General Director, council)</p>
<p>Securing fund for CPD</p>	<p>“Funding should be from a sustainable source and not linked to external projects that support us in Jordan as an advanced country, i.e. we should try to make the source of support internal as much as possible.” (Nurse, university hospital)</p> <p>“We need provide opportunities as my colleagues at the Ministry of Health always complain about the limited opportunities. For example, scholarships and external courses. Some doctors with up to 20 years’ experience [at the MOH] have not attended any conferences, but these conferences are easily available to resident doctors in the RMS.” (Director, RMS hospital)</p>
<p>Cost-free CPD and protected learning time</p>	<p>“...The other obstacle is that the time allocated for professional development is unprotected, which means it comes at the expense of the employee's time. I think that there should be time dedicated for employees to attend such programs, perhaps one or two weeks throughout a year, which is not considered annual leave as it is continuing professional development.” (Director, university hospital)</p> <p>“It is true that lack of time [for CPD] is a problem for health staff, as the nature of their work is pressing. Therefore, it is necessary to have time allocated to follow up on such matters. Time considerations should also be included in the Ministry of Health Law so that hospitals, health centers, and health institutions compensate for the time used when taking part in courses. For example, if I would like to attend a certain course, when I apply for it I should get approval without forgoing salary or being required to take leave without pay. Eventually I will benefit, and the institution will also benefit.” (Allied health professional, university hospital)</p>
<p>Fairness and justice in the inclusion of all employees</p>	<p>“The CPD system should be just and fair to all employees.” (Allied Health Professional, university hospital)</p>

Discussion and Recommendations

Discussion

Healthcare practitioners in Jordan are generally positive to undertaking CPD over the course of their careers. However, more needs to be done to systematize CPD so that it is easily accessible and considered a core part of daily work.

Continuing education encompasses the period of learning from post registration and enrollment until the end of a career. CPD is intended to enable HCPs to keep their knowledge and skills up-to-date with the ultimate goal of helping them provide the best healthcare services, improve patient outcomes, and protect patient safety. Studies have shown that change in HCP's behavior is more likely to occur when a meaningful assessment of the learning needs serves as the basis for determining the content of CPD. The purpose of this research was to assess the current CPD practices, attitudes, barriers, and learning necessities of Jordanian HCPs.

Current CPD Practices and Providers

Participants demonstrated an acceptable level of participation in CPD. However, it was lower than the internationally reported CPD participation rates of 80%-90% in designed CPD programs annually among licensed HCPs (Hopcraft et al 2008; Sholer et al 2011). Most respondents indicated that they had practiced CPD in some form including attending workshops, conferences, local seminars, and reading journal articles. However, only a minority reported that they had been involved in research activities or published scientific articles. It is unclear from the data whether the method of engagement in CPD type was due the availability of CPD type in the HCP's respective field of work or whether it was driven by personal preference. However, this should be further explored in the development of a more comprehensive CPD system to ensure that CPD activities are tailored to what is practicably possible and align with learning preferences. Given the low levels of reported engagement with research activities (which would normally form a core part of CPD), this should also be further explored.

Results indicated that participations in CPD was unequal. Physicians, dentists, and pharmacists participated more frequently compared to nurses and allied health professionals; women also participated significantly less than men. Reasons for this are unclear. However, one respondent in the qualitative responses indicated that women found it difficult to travel away from their home-base to attend CPD activities. Further research is therefore warranted to examine the drivers of inequitable access affecting participation rates. About half of HCPs indicated that they undertake CPD activities just to comply with requirements (department/section policy or a national policy) which suggests more needs to be done to engender a culture of continuous learning. The majority of respondents considered career progression (87%) and personal interests (87.1%) as their primary motivations to practice CPD. This is a very positive finding as it shows that HCPs value CPD and view it as a vehicle for career growth and development. Consistent with this, many of the comments from HCPs indicated that promotion is the main motivator for engagement in CPD activities. These findings are consistent with the results of the Jordanian study (Jaradeh & Abu Hamdeh, 2010) which reported that the primary motivators for involvement in CPD activities were related to increasing professional knowledge and enhancing self-esteem, and the international literature (Bahan, 2007; Ellis and Nolan, 2005) which showed that motivators of HCPs involvement in CPD are related to personal benefits such as enhancing knowledge and career progression.

With respect to CPD providers, participants indicated that e-learning, other internet activities, and drug companies as the top contributors to their current CPD practices. E-learning and

internet CPD activities could be more accessible for HCPs who could do not travel from one place to another; one of the major reported barriers to engagement in CPD activities was related to remoteness and unavailability of programs that are close to work or living place. Drug companies are considered a major contributor to funding CPD practices especially for physicians and pharmacists. Council conferences contributed the least which suggests the need for a national policy that highlights the role of councils in offering CPD related activities as professional councils have the resourcing required to offer CPD activities. The little contribution of conferences to CPD practices of HCPs was evident in some of the interviewees' comments as conferences were not perceived as a part of CPD since they are not focused, oriented, or structured. Further, there were some observations on the credibility of the methodologies currently followed which often does not exceed a certificate of attendance at a conference or workshop.

Experiences and Attitudes toward CPD

Respondents generally demonstrated excellent attitudes toward CPD, especially as a tool to keep them up-to-date in their field of expertise and to improve their practices. Only a minority reported unwillingness to participate in CPD where it was not mandatory. Respondents could see a positive impact from CPD on their careers, such as feeling that they were more respected because of it or more confident in their abilities. The majority of respondents also indicated that CPD had enhanced their knowledge and improved their practical skills. Most importantly, a majority of respondents indicated an improvement in their patients' outcomes due to their CPD practices. Accordingly, implementing any future CPD system is unlikely to be hampered with a culture of resistance to partaking in CPD given the largely positive attitudes, and indeed HCPs perceived benefit in the application of CPD to their work and career progression. Such attitudes are congruent with those found in the Jordanian study of Jaradeh & Abu Hamdeh (2010) that was conducted among nurses who reported their engagement in CPD enhanced the quality of care and improved their performance, as well as those of an international study that was conducted among physical therapists in Canada by UBC (2014) who noted that the engagement in CPD was positive as it kept them up-to-date with practice developments. However, there remains limited data in the Jordanian context on the impact of CPD on clinical outcomes and more studies are needed in this regard.

CPD Needs and Interests

The results showed that most participants were interested in clinically focused content of CPD and less interested in broader training in areas such as management. Dentists in particular emphasized their preferences for hands-on training. Nurses on the other hand, showed the least interest in participation in CPD activities which might be due to the high workload and staff shortage which sometimes force nurses to do the minimum required care. Evidence has shown that assessing the learning needs of HCPs concerning CPD content is the first step toward behavior change (Bower et al., 2008; Elshami et al., 2016). Importantly in this study the data suggests that respondents were very concerned about the lack of CPD activities except those who worked in RMS hospitals where CPD was more readily available. Accordingly, given the limited CPD offered, it is critical that what is offered is perceived as valuable and appropriately targeted to HCP's learning needs. Thus, CPD providers should design a greater range of CPD activities which are responsive to HCPs learning needs through regular assessment, evaluation, and sharing findings on preferred content areas with CPD educators and providers.

Barriers and Enablers to CPD

Staff shortages, heavy workload, limited funds, lack of time, event costs, and CPD not being mandatory were identified as the top barriers to accessing CPD in Jordan. In addition unfairness in the selection of attendees at CPD activities was also noted as a barrier. It is clear from this assessment that HCPs face financial and structural challenges, which hinder their participation in CPD. These barriers are similar to those reported in the Jordanian study (Jaradeh & Abu Hamdeh, 2010) and the international literature (Friedman & Woodhead, 2008; Hallin & Danielson, 2007; Keane, Lincoln, Smith, 2012; Lloyd et al., 2013; Priscah et al., 2017; Schostak et al., 2010; UBC CPD, 2014). These results indicate that healthcare policymakers need to explore ways to improve HCPs participation in CPD activities. Paid leave to participate in CPD may help in this regard as would increasing the number of CPD activities accessed online. It is also imperative that employers and other stakeholders be engaged with an enhanced CPD agenda to ensure that budget is allocated to CPD and staff are given time off to attend.

The enablers to CPD participation were in some ways the converse of the barriers. Key reported enablers included supportive administrations, internal desire, protected time to attend CPD activities, having a culture and an environment that valued CPD, awareness, the provision of incentives, the presence of accessible CPD programs, and activities being conducted by qualified persons. These findings are not peculiar to Jordan and are in line with other international studies (Al-Ma'aitah & Momani, 1999; Hallin & Danielson, 2007; Hemmington, 2000; Schostak, et al., 2010; (UBC CPD), 2014)

As remoteness to CPD was considered a significant barrier proximity to HCP's homes an enabler, finding innovative delivery strategies that do not require long travel times will be critical if Jordan is to improve the level and frequency of CPD participation. With internet penetration high in Jordan, efforts need to be made to provide a broader range of CPD activities online. In addition, decentralizing CPD workshops from major towns to better reach practitioners working in more rural and underserved areas appears sensible. Regional professional association branches should be approached to work with CPD providers to identify suitable locations within their areas for conducting decentralized workshops and meetings. Remoteness as a barrier in the present study contradicts the results of a Canadian study (UBC CPD) (2014) which found that rural and urban-based physiotherapists shared similar attitudes in the extent to which CPD location affects their participation. This difference, however, might be attributed to the abundance of CPD offerings in Canada (including online) compared to Jordan.

CPD Necessity

A high-level of agreement was expressed by the participants on the necessity of CPD for their careers. While moderate agreement was observed on CPD being mandatory, a higher agreement level was observed on mandatory CPD when the cost was low. Cost is an important CPD barrier and should be tackled by healthcare providers if CPD is deemed mandatory. Engaging in a CPD activity would cost on average one-third of the monthly salary of a nurse as indicated by the results of the present study. These concerns were also raised by the study of UBC CPD (2014) among physiotherapists in Canada and the study of Schostak et al. (2010) among physicians in London.

CPD Design

Agreement on CPD delivery mechanism was relatively high for all suggested CPD activities with journal or internet reading, small group interactive settings, and lectures in large group settings as the top three most desired activities. This gives more flexibility to CPD providers when they plan for specific CPD activities. CPD providers need to explore the suitability and relevance of more innovative methods of delivering CPD programs such as the use of information technology, distance-learning, email, intranets, web-based, or online delivery and e-learning to address the challenges related to travel and the requirement for a participant to take a course at a specific predefined time and location. This issue would need to be addressed comprehensively in CPD policy guidelines to ensure enhanced access to CPD materials and to facilitate and encourage HCPs to undertake the activity. It is also critically important that clear guidelines on activities that qualify for categorization as CPD are developed and disseminated to stakeholders.

Participant's preferences on CPD topics must also be considered when planning for CPD activities going forward. The majority of participants indicated that health/medical informatics was their preferred topic. However, health and medical informatics is rarely covered in undergraduate study in Jordan, and hence an increase in the number of CPD activities that explore these topics is needed. More advanced CPD activities which relate to enhancing skills in evidence-based practice should also be considered given results indicated that further training in this area was of high importance to participants.

Effectiveness of Current CPD Practices

Participants considered CPD to have impacted positively on their careers. The majority indicated that current CPD practices enhanced their knowledge and practical skills. These results are similar to the results of a Canadian study (Schostak et al., 2010), which showed that the most significant impact of CPD as reported by physicians was a change in treatment practice, knowledge acquisition, and learner satisfaction. However, a number of key informants noted the difficulty of judging the effectiveness or impact of CPD activities in Jordan, with some indicating that CPD activities are ineffective and that there were no formal CPD models. Others had negative perceptions of CPD and considered it of limited impact. The literature on the measurement of CPD in terms of outcomes is scant. Few institutions evaluate CPD by outputs, and those that have an output-based system usually only require 'evidence' of output; the quality of the output is hardly assessed in any systematic manner (Friedman & Woodhead, 2008; Schostak et al., 2010). The same could be said for Jordan with no overarching body mandated to monitor CPD for the health sector under which CPD programs could be evaluated with respect to health outcomes.

Suggested improvements by participants to policies and delivery of CPD

Of utmost importance to participants was the necessity to introduce a policy which mandated the completion of CPD requirements for re-licensing of HCPs. This suggestion has since been introduced in Jordan pursuant to the bylaw on the mandatory renewal of licenses for health professionals which was issued on April 1, 2018. This speaks to the importance of the bylaw as well as the agreement of participants on the necessity of developing such a bylaw. Having the bylaw in place, establishing accredited bodies for CPD activities, and developing policies that regulate CPD requirements of HCPs and its cost are necessary and feasible steps to be implemented in any further CPD reform in Jordan.

Recommendations

The research findings pointed to several recommendations in regard to regulation/policy, CPD content and delivery mechanisms, evaluation systems, and future studies. CPD regulations need to be improved to mandate CPD for re-licensing of all HCPs. Policy guidelines of CPD need to be revised to introduce a system which clearly stipulates what activities qualify for accruing points/credit, their categorization, the awarding criteria, and the thresholds for compliance. Furthermore, providers of CPD and their programs should be accredited by an appropriately mandated national body to ensure best practices, quality assurance, transparency, and accountability of CPD activities. This accreditation body should work with CPD providers to expand the range of courses and topics offered to meet the knowledge, skills, and needs of all practitioners taking into consideration gender differences.

Further, CPD providers should explore and utilize innovative approaches for delivering their programs and courses. This may include e-learning, distance-learning, and web-based platforms. The pool of CPD providers should be expanded to include stakeholders in addition to the professional associations and councils to improve access to CPD activities for those in smaller urban centers and rural settings. A collaborative network of organizations could be established through which CPD can be offered as a shared model of activities to increase efficiency. Professional associations and councils should encourage workplaces in all healthcare sectors to instill and promote a culture of CPD participation, and to investigate how they can better support their HCP's participation in CPD (e.g. protected time for CPD participation).

Moreover, monitoring and evaluation systems should be developed or strengthened to assess the implementation and impact of CPD programs. An electronic web-based system could be developed for recording and evaluating participation in CPD activities. This should provide linkages for the seamless flow of information between professionals, CPD providers, the regulatory body, and policy makers. Future research studies should assess if CPD offerings are tailored to meet the needs and preferences of HCPs and if they follow best practices in CPD. It should also evaluate the impact of CPD programs on the practices of HCPs and patient outcomes such as the quality of care and patient safety.

Further, it is recommended to develop and implement:

1. A national framework involving healthcare organizations, councils, professional associations, and the government to explore funding challenges and lower delivery cost models that enhance participation in CPD activities.
2. Policies which tie CPD to incentives including promotion.
3. Policies which provide for fairness in the selection process of HCPs to undertake CPD.
4. Policies which provide for funding, cost share, and protected time for CPD activities.

Conclusions

This study explored factors that influence CPD offerings, needs, practices, experiences, and its effectiveness in the healthcare sector in Jordan. Encouragingly, results indicate that CPD is valued amongst health workers as an important vehicle in keeping them up-to-date, improving their practices, and ultimately ensuring better patient care. At a more individual level, HCPs were driven to participate in CPD by career progression and personal interest. The findings also provided interesting insights into preferences of HCPs with respect to CPD content which needs to be taken into consideration by CPD providers in the development of CPD activities going forward. While attending courses, workshops, and conferences remain an important component of CPD, this can be enriched by providing an increased number of online and e-learning opportunities, particularly considering Jordan's high internet penetration rates.

The main perceived enablers to CPD were the presence of: accessible CPD programs, a supportive administration, protected time to attend CPD activities, and a workplace culture that valued CPD. Participants were also keen to see CPD better incentivized through pay and promotion. The main perceived barriers were time constraints due to staff shortages and heavy workload and limited funds.

CPD participation for women was significantly less than men and further study is warranted to more closely examine the access reasons; interview comments suggest that travel to attend CPD is more difficult for women. There are also disparities in the amount of CPD which is accessible to physicians, dentists, and pharmacists compared to fewer offerings for nurses and allied health professionals. These barriers to access need to be addressed to ensure that they don't become further entrenched when developing CPD policies. University and teaching hospitals also reported low CPD participation rates; while this may be due to the institution's focus on academic or clinical research rather than traditional CPD, further study is warranted.

The challenge of sustainable funding and who (HCP or employer) should pay for CPD was also frequently raised by HCPs. This is likely to remain a persistent challenge with increasing pressure on the health system to do more with less. Further study is needed into the economic impact and return on investment for CPD in Jordan to support policy makers in consideration of budget allocations. Participants were particularly keen to see the CPD system become mandatory which would entail a significant overhaul and expansion of the current more ad-hoc system. The recent bylaw is the first step, but as with any regulatory reform, significant work remains to ensure its effective implementation. With respect to expansion of the CPD system, Jordan would benefit from considering the successful experiences of instituting a national CPD system from countries in the region such as Oman or Qatar, and from advanced countries such as the USA or UK.

In some ways it is an opportune time for Jordan to embark on an overhaul of the CPD system within its health sector. Substantial government support for reform efforts and the vast majority of HCPs cognizant of the value of CPD and pushing for it to become mandatory, create the right buy-in for its implementation. Beyond better health outcomes for its population, if Jordan wants to continue to position itself as a health tourism destination it will need to broaden and deepen its system of CPD and accreditation to gain greater credibility internationally. The insights gained through this research provide pointers to policy makers with respect to areas for greater focus in any such reform. However, this will need to be coupled with sufficient budgetary commitment from stakeholders to ensure that these reform measures can be appropriately implemented.

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Annex A. Quantitative Questionnaire

Factors Influencing CPD Effectiveness and Practices in the Healthcare Sector in Jordan

Governorate: _____
Name of Facility: _____

Participant code: _____

We are conducting research to support the Ministry of Health (MOH) to develop strategies and policies for continuous professional development (CPD) of healthcare professionals. We are investigating the current practices, attitudes, and barriers to participation in CPD and would like to ask you a few questions related to your experience. Participation is voluntary, and we would very much appreciate your collaboration. Completing this questionnaire will cost you about 5 minutes. This questionnaire is anonymous; all results will be summarized in a report from all the facilities.

Do you agree to participate?

- Yes → Thank you! Please proceed to questions.
 No → Thank you for consideration.

Section I: Socio-Demographic Information	
1. Age:	2. Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female
3. Marital status: <input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Divorced	4. Experience (years):
5. Place of work: <input type="checkbox"/> city <input type="checkbox"/> Town <input type="checkbox"/> Village	
6. Education level: <input type="checkbox"/> PhD <input type="checkbox"/> Master <input type="checkbox"/> BA <input type="checkbox"/> Diploma	
7. Healthcare sector: <input type="checkbox"/> MOH <input type="checkbox"/> RMS <input type="checkbox"/> Private <input type="checkbox"/> University hospital <input type="checkbox"/> UNRWA	
8. Profession: <input type="checkbox"/> Physician <input type="checkbox"/> Nurse <input type="checkbox"/> Pharmacist <input type="checkbox"/> Dentist <input type="checkbox"/> Allied healthcare professional	
9. Graduation country: <input type="checkbox"/> Eastern Europe <input type="checkbox"/> Western Europe <input type="checkbox"/> USA <input type="checkbox"/> Arab country <input type="checkbox"/> Other	

Section II: Current Participation in CPD		
Statement	Yes	No
1. I have published an article in the past two years.		
2. I have attended a conference in the past two years.		
3. I have conducted a training workshop in the past two years.		
4. I have attended a training workshop in the past two years.		
5. I have participated in an on-line activity (workshop, course, etc.).		
6. I have been involved in a research activity recently.		
7. I keep reading journal articles from time to time.		
8. I have attended local seminars.		
9. I keep track of my CPD hours/ points.		
10. I have attended more than two conferences in the past five years.		
11. I have checked the recent guidelines in my specialty		
12. How many scientific articles have you published in the last two		

years?	
13. How many conferences have you attended in the last two years?	
14. How many training workshops have you conducted in the past two years?	
15. How many training workshops have you attended in the past two years?	
16. On average, how many scientific articles do you read annually?	

Section III: Motivation					
The following items are considered motivations for me to participate in CPD:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Appraisal					
2. Career progression					
3. Collecting CPD points					
4. Department/section policy					
5. Discussion with colleagues					
6. Formal needs assessment					
7. Personal interest					
8. Knowledge/skills gap					
9. Mandated					
10. National Policy					
11. Patient feedback					
12. Performance review					
13. Reflection on practice					

Section IV: Attitudes towards CPD					
Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I feel more respected by supervisors/peers because of increased knowledge					
2. I feel more respected by other people because of my knowledge					
3. CPD should be mandatory for all HCPs					
4. I plan to participate in CPD events even if it is not mandatory					
5. Mandatory CPD will encourage HCPs to learn more					
6. Participation in CPD makes HCPs more confident in their work					
7. CPD keeps HCPs up-to-date					
8. CPD ensures better patient care					
9. CPD improves practice					
10. CPD is important to me					

Section V: CPD impact					
Participation in CPD activities have	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

1. changed my attitude					
2. changed my work practices					
3. improved relation with my colleagues					
4. improved my practical skills					
5. enhanced my knowledge					
6. satisfied my learning ambition					
7. improved my patient's outcomes					
8. improved my patients and family satisfaction					

Section VI: Barriers towards CPD					
In your opinion, to what degree the following items may prevent you from participation in CPD activity?	Very High	High	Moderate	Low	Very Low
1. Satisfaction with my field knowledge					
2. Availability of activities of interest to me					
3. Ability to obtain work leaves					
4. Event cost (fees)					
5. Limited funds					
6. Lack of encouragement (from colleagues, employer, etc.)					
7. Staff shortage and workload					
8. Irrelevant topics covered					
9. Lack of time					
10. CPD is not mandatory					
11. Lack of CPD resources/ activities					
12. Family responsibilities					
13. Remoteness (work/live far from CPD activity location)					

Section VII: CPD Providers			
Which of the following are the main provider to your current CPD practice? Please check the three main providers:			
1. College conferences		5. Councils conferences	
2. Drug companies		6. Another internet	
3. e-Learning		7. Specialty associations	
4. Local provision (i.e., in hospital)			
8. Other (please specify):			

Section VIII: CPD design					
In your opinion, to what degree you will participate in a CPD activity of the following types?	Very High	High	Moderate	Low	Very Low
1. Lectures in large group setting					
2. Small group interactive setting					
3. Interactive computer programs					
4. Journal or internet reading activity					
5. National conferences					
6. International conferences					

7. Research based activities					
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Section IX: CPD necessity									
On a scale of 10 points, indicate the extent to which you believe CPD is necessary for your practice:									
Not Important at all					Very important				
1	2	3	4	5	6	7	8	9	10
On a scale of 10 points, indicate the extent to which you believe CPD should be mandatory:									
Don't Agree					Strongly Agree				
1	2	3	4	5	6	7	8	9	10
On a scale of 10 points, indicate the extent to which you believe CPD should be mandatory if cost is low:									
Don't Agree					Strongly Agree				
1	2	3	4	5	6	7	8	9	10

Section X: CPD content interests and needs				
Please rate the level of interest in participating in CPD activities in the following areas:				
Area	Not interested	Slightly interested	Moderately interested	Very interested
1. Clinical content				
2. Professional content				
3. Education/supervising				
4. Enhancing skills in evidence-informed practice				
5. Managerial skills				
6. Health/medical informatics				

Thank you for your kind time and for sharing this information with us

Annex B.I. Qualitative interview guide for key informants

Demographic Form

1. What is your age? [] year
2. What is your sex? 1. Male 2. female
3. What is your highest level of education? 1. Diploma 2. Bachelor's degree 3. Master's degree or high specialty 4. Doctoral degree or sub-specialty
4. What is your field of education? 1. Medicine 2. Nursing 3. Pharmacy 4. Allied Health 5. Other
5. What is your marital status? 1. Single 2. Married 3. Divorced 4. widowed
6. What is your title? _____
7. How many years of work experience do you have? [] year

Interview Guide

1. As a key policy maker, what are the factors that influence participation of healthcare professionals in different sectors (public, private, teaching) in CPD activities?
 - a. What do you think are the enablers that contribute to professionals' accesses and participation in CPD activities?
 - b. What do you think are the barriers that hinder professionals' access and participation in CPD activities?
 - c. In your opinion, are there differences for professionals in public sector compared to those in private sector concerning participation in CPD activities? Why do you think this is the case?
2. Could you please discuss the CPD models or systems used in the healthcare sector in Jordan?

- a. Could you please discuss what kind of CPD policies are in place?
 - b. What methods are used for gathering evidence of professionals' participation in CPD activities?
 - c. What are the pros and cons of using such methods?
 - d. Do you believe there are differences between public and private sectors concerning CPD? Would you please explain what the differences between private and public sectors are? Why do you think these differences are present?
3. Would you please tell me about the themes of CPD activities that are available for healthcare professionals in different sectors?
- a. Would you please elaborate on CPD requirements for healthcare professionals?
 - b. What parties involved in shaping and delivering CPD activities?
4. In your opinion, how do you perceive the effectiveness of current CPD activities?
- a. Why do you think this?
 - b. Would you tell me how the impact or effectiveness of CPD activities is evaluated and by whom?
5. How do you feel about instituting a national system to regulate CPD for healthcare professions?
- a. What are your suggestions or recommendations to institute a national CPD system for healthcare professions in Jordan?
 - b. What parties should be involved to move up these recommendations?
 - c. How do you perceive your role in this process?
 - d. How do you envision the funding aspects of CPD activities for healthcare professionals?
 - e. Would you please discuss what the policies are that need to be in place to implement such a national CPD system?
6. Is there anything else you would like to discuss with me that we did not cover?

Thank you for your kind time and for sharing this information with us.

Annex B.2 Qualitative Interview Guide for Healthcare Professionals

Demographic Form

1. What is your age? [] year
2. What is your sex?
 1. Male 2. Female
3. What is your highest level of education?
 1. Diploma
 2. Bachelor's degree
 3. Master's degree or high specialty
 4. Doctoral degree or sub-specialty
5. What is your field of education?
 1. Medicine
 2. Nursing
 3. Pharmacy
 4. Allied Health
 5. Other
6. What is your marital status?
 1. Single
 2. Married
 3. Divorced
 4. widowed
5. What is your title? _____
6. How many years of work experience do you have? [] year

Interview Guide

1. As a clinician, what are the factors that influence your participation o in CPD activities?
 - a. What are the enablers that contribute to your accesses and participation in CPD activities?
 - b. What are the barriers the hinder your access and participation in CPD activities?
2. Would you please tell me about CPD activities that are available for you?
 - a. What parties involved in shaping and delivering CPD activities?
 - b. Would you please discuss what are your needs and priorities for CPD?
 - c. What is expected of you concerning CPD?

3. How do you perceive the effectiveness of current CPD activities?
 - a. Why do you think this?
 - b. Would you tell me how the impact or effectiveness of CPD activities is evaluated and by whom?
4. How do you feel about instituting a national system to regulate CPD for healthcare professions?
 - a. What are your suggestions or recommendations to institute a national CPD system for healthcare professions in Jordan?
 - b. What parties should be involved to move up these recommendations?
5. Is there anything else you would like to discuss with me that we did not cover?

Thank you for your kind time and for sharing this information with us.

Annex C.I. Informed Consent – Focus Group Discussions

Introduction

Good morning/afternoon, my name is _____ and I work for _____. We are researchers recruited by a project called Human Resources for Health 2030 (HRH2030), to assist the Ministry of Health in developing policies to institute a national system for Continuing Professional Development (CPD). We will be conducting interviews and focus group discussions with healthcare professionals including physicians, nurses, pharmacists, dentists, and allied health professionals. We are conducting these activities with the aim to explore factors that influence CPD offerings, needs, practices, experiences, and effectiveness in the healthcare sector in Jordan. The information of this research is intended to be used for policy making by the Ministry of Health. Before we continue, we would like to ask you to read the consent form and to tell us if you agree to participate.

We have invited you to participate in a discussion with several other people with similar experiences. This enables you to discuss your experiences with each other. Your participation is voluntary, and it will have no consequences for your work or your situation in this facility. During the discussion, you can stop any time, even if you agreed to participate at the start of the focus group discussion.

We will organize these discussions in several facilities. In addition, we will ask these questions physicians, nurses, pharmacists, dentists, and allied health professionals in different facilities and we have a form with questions that will be filled out.

We expect that this focus group discussion will last for about one hour to one hour and a half. During this time, we will start by making sure that you are comfortable and we can answer any questions you might have. We then will ask questions about CPD experiences and effectiveness. We ask you to express yourself freely. No one else but the other people participating and us researchers will be present. We will not ask you to share your personal experiences, and you do not have to share any information you feel not comfortable sharing. You do not have to give us a reason for your refusal.

We request that everyone in this group not to tell others outside this group what was said during the discussion and keep what was said in the group confidential. You should know, however, that we cannot stop or prevent participants who were in the group from sharing things that should be confidential.

This research will not directly benefit you, but your participation is likely to help in the design of an effective national system for CPD. The discussion is confidential and anonymous. We assure everyone that no one's name can be linked to the research and that instead of names we will use numbers. These numbers are only known to us, the researcher, and we will lock that information up with a lock and key. With your approval, this discussion will be recorded, and we will also make sure that your name is not mentioned in the recorded discussion. The notes and the recorded discussion will only be accessed by the research team. These will be stored in a safe place that is only accessible to the researchers. The recorded discussion will be destroyed when we have finalized our research.

The information you will give us today will not be shared with anyone outside the research team. When the results of the research are ready, we will share a summary of the results with the facilities that participated. After this, the results will be made widely available to others, such as the Ministry of Health and the High Health Council.

Contact person

If you have any questions about the research, you can contact (Prof. Raeda AbuAlRub, Tele: 0772392586).

Consent

I have read the information about the research and how it is conducted as described above. I have had the opportunity to ask questions about it, and any questions I have been asked and been answered to my satisfaction. I consent voluntarily to be a participant in this research.

Print Name of Participant: _____

Signature of Participant: _____

Date: _____

Day/month/year

Annex C.2. Informed Consent – Individual Interviews

Introduction

Good morning/afternoon, my name is _____ and I work for _____. We are researchers recruited by a project called Human Resources for Health 2030 (HRH2030), to assist the Ministry of Health in developing policies to institute a national system for Continuing Professional Development (CPD). We will be conducting interviews and focus group discussions with healthcare professionals including physicians, nurses, pharmacists, dentists, and allied health professionals. We are conducting these activities with the aim to explore factors that influence CPD offerings, needs, practices, experiences, and effectiveness in the healthcare sector in Jordan. The information of this study is intended to be used for policy making by the Ministry of Health. Before we continue, we would like to ask you to read the consent form and to tell us if you agree to participate.

We have invited you to participate as we can learn a lot from your experiences. Your participation is voluntary and it will have no consequences for your work or your situation in this facility. During the interview you can stop any time, even if you agree to be interviewed at the start of the interview.

We expect that our interview will last for about one hour and during this time, we will ask questions about CPD experiences and effectiveness. We ask you to be open and express yourself freely. If you feel uncomfortable answering certain questions, you are free to refuse and we will continue the interview with the following questions.

The interview is confidential and anonymous. We assure that your name can not be linked to the research and instead of names we will use numbers. These numbers are only known to us, the researcher, and we will lock that information up with a lock and key. With your approval, the interview will be recorded, and we will also make sure that your name is not mentioned on the recorded interview. The interview notes and the recorded interview will only be accessed by the research team. These will be stored in a safe place that is only accessible to the researchers. The recorded interview will be destroyed after the results are analyzed.

This research will not directly benefit you, but your participation is likely to help in the design of an effective national system for CPD.

The information you will give us today will not be shared with anyone outside the research team. We will review our notes after interview and when we are not sure if we understood your answers correctly we would like to ask your permission to come back and ask for clarification. When the results of the study are ready we will share a summary of the results with the facilities that participated. After this, the results will be made widely available to others, such as the Ministry of Health and the High Health Council.

Contact person

If you have any questions about the research, you can contact (Prof. Raeda AbuAIRub, Tele: 0772392586).

Consent

I have read the information about the study and how it is conducted as described above. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant: _____

Signature of Participant: _____

Date: _____ Day/month/year

Annex D.I. Extra Tables

Table D.I: Summary of sample sizes needed and collected to estimate current HCP's participation in CPD activities by healthcare profession, sector and governorate.

HCP	Gov	MOH		RMS		KAUH		JUH		Private Hospitals/clinics		UNRWA		Total	
		Needed	Collected	Needed	Collected	Needed	Collected	Needed	Collected	Needed	Collected	Needed	Collected	Needed	Collected
Physicians	Amman	94	117	36	46	0	0	22	31	107	118	2	2	266	314
	Irbid	30	38	12	15	15	17	0	0	35	41	1	1	86	112
	Alkarak	8	15	3	4	0	0	0	0	9	12	0	0	22	31
	Total	132	170	51	65	15	17	22	31	150	171	3	3	374	457
Dentists	Amman	30	36	18	23	0	0	2	15	207	208	1	1	258	283
	Irbid	10	14	6	7	1	1	0	0	67	70	0	0	84	92
	Alkarak	3	5	1	2	0	0	0	0	17	18	0	0	22	25
	Total	43	55	25	32	1	1	2	15	291	296	2	1	364	400
Pharmacist	Amman	13	34	5	7	0	0	1	16	247	253	0	0	266	310
	Irbid	4	7	2	2	1	5	0	0	80	83	0	0	86	97
	Alkarak	1	4	0	0	0	0	0	0	21	22	0	0	23	26
	Total	18	45	7	9	1	5	1	16	349	358	0	0	375	433
Nurses	Amman	88	114	67	72	0	0	12	22	88	92	1	1	266	301
	Irbid	29	38	22	24	19	20	0	0	29	50	0	0	86	132
	Alkarak	7	11	6	8	0	0	0	0	7	10	0	0	23	29
	Total	125	163	94	104	19	20	12	22	124	152	1	1	375	462
Allied HCP	Amman	78	97	78	79	0	0	30	42	75	79	0	0	273	297
	Irbid	25	31	25	26	30	32	0	0	24	36	0	1	89	126
	Alkarak	7	11	7	8	0	0	0	0	6	10	0	0	23	29

	Total	110	139	110	113	30	32	30	42	105	125	0	1	385	452
Total		427	572	287	323	66	75	67	126	1,020	1,102	6	6	1,873	2,204

Table D.2: Qualitative sample size of key informants and HCPs from public, private, university hospitals, and RMS

Category	Collected Sample
Ministry of Health (3 individual interviews)	Minister or Secretary General Human Resources Licensing of Health Professions and Institutions Directorate
Royal Medical Service (1 individual interview)	Director of RMS Hospital
Health facilities (4 individual interviews)	Directors Public, private, university hospitals
Professional councils (3 individual interviews)	Secretary Generals High Health Council Jordanian Nursing Council Jordan Medical Council
Professional associations (4 individual interviews)	Presidents Nursing Allied health Pharmacy Dentistry
Universities and schools (6 individual interviews)	Deans Nursing Allied health Pharmacy Dentistry
Non-governmental organizations (1 individual interview)	Private hospitals association (1)
Healthcare professionals (public, private, university hospitals, RMS) (18 focus group discussions)	(5) Focus groups of 5-10 nurses from private, public, and university hospitals, RMS (5) Focus groups of 4-8 physicians from private, public, and university hospitals, RMS (2) Focus groups of 4-8 allied healthcare professionals (teaching, public) (3) Focus group of 4-8 pharmacists (university hospitals) 3 focus groups of 3-8 dentists (teaching, public, RMS)

Total	Key informants' sample: 22 Number of FGDs: 18 with a total of 98 HCPs
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Table D.3: Summary of participants' demographics by health sector

Health Sector						
Factor	Category	MOH (n=572%)	Private (n=1108%)	University hospital (n=201%)	RMS (n=323%)	Total (n=2204)
Gender	Male	301 (27%)	584 (52.4%)	114 (10.2%)	116 (10.4%)	1115 (51%)
	Female	265 (24.7%)	522 (48.7%)	86 (8%)	199 (18.6%)	1072 (49%)
Marital Status	Single	143 (17.3%)	535 (64.6%)	56 (6.8%)	94 (11.4%)	828 (38.2%)
	Married	411 (31.4%)	540 (41.3%)	142 (10.8%)	216 (16.5%)	1309 (60.4%)
	Divorced/widow	7 (21.9%)	16 (50%)	2 (6.2%)	7 (21.9%)	32 (1.5%)
Education/supervising	Diploma	143 (41.7%)	123 (35.9%)	22 (6.4%)	55 (16%)	343 (15.7%)
	BA	334 (22.6%)	814 (55.1%)	111 (7.5%)	217 (14.7%)	1476 (67.5%)
	Master	52 (20.4%)	124 (48.6%)	54 (21.2%)	25 (9.8%)	255 (11.7%)
	Ph.D.	39 (34.5%)	40 (35.4%)	14 (12.4%)	20 (17.7%)	113 (5.2%)
Country of Graduation	Jordan	429 (24.6%)	845 (48.4%)	178 (10.2%)	293 (16.8%)	1745 (79.4%)
	Arab Country	42 (19.7%)	146 (68.5%)	12 (5.6%)	13 (6.1%)	213 (9.7%)
	East Europe	88 (56.1%)	57 (36.3%)	4 (2.5%)	8 (5.1%)	157 (7.1%)
	West Europe	5 (11.1%)	34 (75.6%)	3 (6.7%)	3 (6.7%)	45 (2%)
	USA	1 (20%)	2 (40%)	2 (40%)	0 (0%)	5 (0.2%)
	Other	4 (12.5%)	22 (68.8%)	2 (6.2%)	4 (12.5%)	32 (1.5%)

Table D.4: Summary of participants' demographics by profession

Profession							
Factor	Category	Physician (n=475%)	Dentist (n=400%)	Pharmacist (n=433%)	Nurse (n=323%)	Allied HCP (n=452%)	Total (n=2204)
Gender	Male	375 (33.6%)	210 (18.8%)	193 (17.3%)	185 (16.6%)	152 (13.6%)	1116 (51%)
	Female	79 (7.4%)	184 (17.2%)	240 (22.4%)	273 (25.5%)	296 (27.6%)	1072 (49%)
Marital Status	Single	187 (22.6%)	134 (16.2%)	232 (28%)	135 (16.3%)	140 (16.9%)	828 (38.2%)
	Married	254 (19.4%)	251 (19.2%)	190 (14.5%)	316 (24.1%)	298 (22.8%)	1309 (60.4%)

	Divorced/widow	8 (25%)	5 (15.6%)	6 (18.8%)	6 (18.8%)	7 (21.9%)	32
Education/supervising	Diploma	1 (0.3%)	11 (3.2%)	54 (15.7%)	111 (32.4%)	166 (48.4%)	343 (15.7%)
	BA	296 (20.1%)	263 (17.8%)	344 (23.3%)	320 (21.7%)	253 (17.1%)	1476 (67.5%)
	Master	68 (26.7%)	104 (40.8%)	30 (11.8%)	22 (8.6%)	31 (12.2%)	255 (11.7%)
	Ph.D.	85 (75.2%)	22 (19.5%)	3 (2.7%)	1 (0.9%)	2 (1.8%)	113 (5.2%)
Country of Graduation	Jordan	213 (12.2%)	240 (13.8%)	404 (23.2%)	450 (25.8%)	438 (25.1%)	1745 (79.4%)
	Arab Country	96	87	15 (7%)	10 (4.7%)	5 (2.3%)	213
	East Europe	110 (70.1%)	38 (24.2%)	5 (3.2%)	1 (0.6%)	3 (1.9%)	157 (7.1%)
	West Europe	15	20	7 (15.6%)	0 (0%)	3 (6.7%)	45 (2%)
	USA	3 (60%)	0 (0%)	0 (0%)	0 (0%)	2 (40%)	5 (0.2%)
	Other	17	13	2 (6.2%)	0 (0%)	0 (0%)	32

Table D.5: Summary of participants' age and years of experience by health sector and profession. Numbers in cells are averages and standard deviations are in parentheses.

Profession						
Factor	Profession	MOH (n=572)	Private (n=1108)	University hospital (n=201)	RMS (n=323)	Total (n=2204)
Age	Physician	35.36 (8.7)	33.37 (10.54)	35.43 (8.4)	34.11 (8.74)	34.42 (9.45)
	Dentist	38.16 (8.22)	35.85	28.31 (3.65)	29.37 (6.17)	35.38 (10.76)
	Pharmacist	39.79 (9.01)	29.48 (8.52)	33.67 (7.21)	26.88 (2.36)	30.57 (8.96)
	Nurse	33.88 (7.81)	30.95 (8.27)	30.68 (4.76)	29.21 (5.18)	31.67 (7.52)
	Allied HCP	35.74 (9.51)	30.21 (9.72)	35.15 (7.81)	30.7 (5.47)	32.81 (8.83)
	Total	35.59 (8.76)	32.08	33.63 (7.47)	30.78 (6.52)	32.94 (9.28)
Years of Experience	Physician	8.28 (7.88)	8.02 (9.49)	11.48 (8.45)	6.98 (6.11)	8.35 (8.51)
	Dentist	12.88 (7.09)	11.52 (10.41)	5.47 (3.4)	6.4 (6.52)	11.09 (9.81)
	Pharmacist	12.41 (7.29)	6.71 (7.67)	9.72 (5.94)	5 (3.66)	7.21 (7.66)
	Nurse	10.52 (6.96)	8.91 (7.91)	8.16 (5.27)	9.04 (5.7)	9.42 (7.04)
	Allied HCP	11.65 (8.65)	8.01 (10.07)	11.64 (8.13)	8.64 (5.88)	9.9 (8.64)
	Total	10.49 (7.85)	8.69 (9.25)	10.18 (7.41)	8.03 (5.95)	9.17 (8.47)

Table D.6: Background variables of participants in FGDs (18 FGDs).

Healthcare Providers							
Variable		Nurses	Physicians	Dentists	Pharmacists	Allied Health workers	Total
Gender	Male	20	12	7	10	6	
	Female	13	13	5	4	8	
Age	<25 years		1	1			
	25-29 years	4	9	3	2		
	30-35 years	8	2	5	3	1	
	36-40 years	12				6	
	>40	9		3	9	7	
Marital Status	Married	29	5	6	13	12	
	Single	1	7	6	1	2	
	Divorced	3					
Years of experience	<15 years	13	11	12	5	5	
	15-19 years	12	1		6	3	
	20-25 years	6			1	1	
	>25 years	2			2	5	
Education Level	Diploma	3			3	7	
	BA	3	11	7	9	7	
	Master	17					
	Ph.D.	5	1	3	2		
Workplace	University hospital	10	5	6	6	6	
	Public hospital	12	9	3	4	8	
	Private hospital	5	7				
	RMS	6	4	3	4		
Governorate	Irbid	23	13	12	14	14	
	Amman	5	7				
	Karak	5	5				
Total		33	25	12	14	14	98

Table D.7: Summary of participants' responses to current practices section of the questionnaire by health sector and profession. Numbers in cells are averages and standard deviations in parentheses.

Health Sector							
Variable	Profession	MOH	Private	University hospital	RMS	Total	P -value
Number of articles published in the last two years	Physician	0.19 (0.74)	0.25 (0.64)	0.79 (1.53)	1.32 (2.23)	0.43 (1.19)	0
	Dentist	0.15 (0.45)	0.28 (1.58)	0.2 (0.56)	0.25 (0.84)	0.26 (1.4)	0.9278
	Pharmacist	0.08 (0.37)	0.25 (1.07)	0.19 (0.68)	0.11 (0.33)	0.23 (1.01)	0.7966
	Nurse	0.27 (1.33)	0.12 (0.58)	0 (0)	0.1 (0.42)	0.16 (0.88)	0.2272
	Allied HCP	0.05 (0.39)	0.56 (4.93)	0.15 (0.46)	0.3 (0.69)	0.27 (2)	0.1138
	Total	0.17 (0.86)	0.28 (1.99)	0.28 (0.89)	0.42	0.27 (1.58)	
	P-value	0.2749	0.4805	0.0001	0	0.1307	
Number of conferences attended in the last two years	Physician	2.52 (2.72)	2.06 (2.45)	2.89 (2.32)	2.05 (2.16)	2.28 (2.51)	0.1717
	Dentist	1.61 (1.37)	2.06 (2.22)	2.75 (1.61)	2.78 (2.39)	2.08 (2.13)	0.0754
	Pharmacist	1.59 (1.78)	1.08 (1.74)	1 (2.1)	1.25 (0.89)	1.12 (1.75)	0.4335
	Nurse	1.4 (7.11)	0.86 (1.29)	0.95 (3.19)	0.56 (0.94)	0.99 (4.32)	0.5524
	Allied HCP	0.23 (0.58)	0.67 (1.28)	0.44 (0.99)	1.24 (1.49)	0.63 (1.18)	0
	Total	1.43 (4.12)	1.42 (1.99)	1.38 (2.33)	1.37 (1.77)	1.41 (2.68)	0.5478
	P-value	0.0005	0	0	0	0	
Number of workshops conducted in the last two years	Physician	0.84 (2.87)	0.41 (0.97)	1.17 (1.56)	0.45 (0.79)	0.66 (1.95)	0.0444
	Dentist	0.24 (0.75)	0.29 (1)	0.56 (0.89)	0 (0)	0.27 (0.93)	0.2224
	Pharmacist	0.32 (1.63)	0.35 (1.87)	0 (0)	0.75 (1.39)	0.34 (1.79)	0.7569
	Nurse	1.48 (8.59)	0.45 (1.27)	0.45 (1.76)	0.22 (0.81)	0.76 (5.19)	0.1986
	Allied HCP	0.12 (0.91)	0.35 (1.04)	0.16 (0.58)	0.49 (3.41)	0.28 (1.86)	0.4255
	Total	0.75 (4.93)	0.36 (1.37)	0.48 (1.25)	0.35 (2.12)	0.47 (2.81)	0.1779
	P-value	0.1674	0.8069	0.0001	0.7281	0.022	
Number of workshops attended in the	Physician	1.92 (2.27)	1.45 (1.84)	1.8 (1.58)	1.26 (1.01)	1.62 (1.9)	0.059
	Dentist	1.1 (1.16)	1.78 (2.12)	2.13 (1.3)	1.67 (2.2)	1.7 (2.01)	0.1303

last two years	Pharmacist	1 (1.65)	1.07 (2.07)	0.95 (1.64)	1.22 (1.86)	1.06 (2)	0.9829
	Nurse	1.21 (2.22)	1.03 (1.72)	1.49 (3.71)	0.88 (1.27)	1.11 (2.11)	0.4779
	Allied HCP	0.57 (1.35)	0.96 (1.72)	0.74 (1.25)	1.34 (3.33)	0.89 (2.05)	0.0541
	Total	1.24 (1.98)	1.3 (1.99)	1.27 (2.11)	1.23 (2.27)	1.28	0.9362
	P-value	0	0	0.0268	0.5929	0	
Average annual number of articles read	Physician	17.98 (30.09)	14.93 (25.19)	23.4 (26.2)	15.83 *27.15)	17.05 (27.37)	0.319
	Dentist	12.58 (21.48)	18.41 (27.34)	37.47 (32.34)	6 (8.85)	17.53 (26.44)	0.0013
	Pharmacist	13.54 (28.08)	16.17 (31.43)	9.39 (23.83)	13.62 (34.99)	15.62 (30.91)	0.8082
	Nurse	8.38 (21.36)	5.28 (16.5)	7.66 (23.83)	2.08 (8.02)	5.94 (18.04)	0.0886
	Allied HCP	5.43 (20.56)	9.85 (23.15)	7.33 (22.26)	4.12 (15.08)	6.75 (20.59)	0.2046
	Total	11.21 (24.88)	14.31 (27.05)	14.07 (26.29)	6.24 (17.6)	12.48 (25.53)	0.0362
	P-value	0.0009	0	0	0.0002	0	

Table D.8: Percentage of participant's current practices by governorate

Item	Governorate			P-value
	Amman	Irbid	AlKarak	
Published an article in the past two years	13.8	12.3	9.3	0.2442
Attended a conference in the past two years	62.5	57.9	57.9	0.1223
Conducted a training workshop in the past two years	18.7	20.1	23.6	0.3266
Attended a training workshop in the past two years	60.7	62.8	70.7	0.0583
Participated in an on-line activity	34.9	35.8	36.4	0.893
Been involved in a research activity recently	26.3	23.5	15.1	0.0091
Keep reading journal articles from time to time	57.9	62.9	64.7	0.0541
Attended local seminars	61.3	59.5	59.4	0.7163
Keep track of my CPD hours/points	38.9	36.5	40.3	0.5344
Attended more than two conferences in the past five years	52.2	45.3	48.2	0.0198
Know current CPD requirements	59.1	59.8	66.9	0.1997

Table D.9: Percentage of participant's current practices by education

Education					
Item	Diploma	BA	Master	Ph.D	P-Value
Published an article in the past two years	6.2	10.2	24.4	45.5	0
Attended a conference in the past two years	30.7	62.1	79.7	95.5	0
Conducted a training workshop in the past two years	9.1	16.8	31.9	50.9	0
Attended a training workshop in the past two years	41.8	62.1	74.8	88.4	0
Participated in an on-line activity	23	33.4	48.4	64	0
Been involved in a research activity recently	12.4	21.7	45.8	55.5	0
Keep reading journal articles from time to time	40.8	57.6	81.5	91	0
Attended local seminars	39.7	59.8	79.6	91.8	0
Keep track of my CPD hours/points	24	38.6	45.5	61.3	0
Attended more than two conferences in the past five years	23.2	48.9	74.9	88.4	0
Know current CPD requirements	42.5	59	74.1	88.4	0

Table D.10: Percentage of participant's current practices by marital status

Marital Status				
Item	Single	Married	Divorced/widow	P-Value
Published an article in the past two years	10.9	14.4	9.7	0.0578
Attended a conference in the past two years	61.3	61.3	43.8	0.1295
Conducted a training workshop in the past two years	14.9	22.1	15.6	0.0002
Attended a training workshop in the past two years	59.2	63.6	62.5	0.137
Participated in an on-line activity	37.5	33.8	31.2	0.192
Been involved in a research activity recently	26.3	23.1	43.8	0.0108
Keep reading journal articles from time to time	57	61.2	56.2	0.1501
Attended local seminars	60.5	60.8	65.6	0.8425
Keep track of my CPD hours/points	35.4	39.9	46.9	0.0647

Marital Status				
Item	Single	Married	Divorced/widow	P-Value
Attended more than two conferences in the past five years	47.3	52	53.1	0.0956
Know current CPD requirements	57.5	60.8	68.8	0.1852

Table D.11: Percentage of participant's current practices by age group

Age Group				
Item	<30	30-39	>=40	P-value
Published an article in the past two years	8.2	15.5	19	0
Attended a conference in the past two years	56.6	61.1	68.6	0.0001
Conducted a training workshop in the past two years	13.6	20.8	29.2	0
Attended a training workshop in the past two years	56.5	63.3	70.2	0
Participated in an on-line activity	35.6	32.4	40.3	0.0236
Been involved in a research activity recently	22.8	26.6	24.9	0.192
Keep reading journal articles from time to time	55.1	58.4	72.5	0
Attended local seminars	56.3	58.3	72.2	0
Keep track of my CPD hours/points	34.7	40	41.8	0.0165
Attended more than two conferences in the past five years	43.6	50.3	63.2	0
Know current CPD requirements	58.6	55.9	68.8	0.0001

Table D12: Summary of CPD impact by health sector. Numbers in parentheses are percentages.

Health Sector						
Item	MOH (n=572)	Private (n=1108)	University hospital (n=201)	RMS (n=323)	Total (n=1861)	P-value
Changed my attitude	390 (77.5)	731 (79.7)	125 (78.6)	221 (78.4)	1467 (78.8)	0.8067
Changed my work practices	401 (79.7)	758 (83.2)	130 (82.8)	221 (78.6)	1510 (81.5)	0.2114
Improved relation with my colleagues	355 (70.7)	674 (73.8)	104 (65)	204 (72.9)	1337 (72.1)	0.1161
Improved my practical skills	420 (83.5)	820 (89.8)	144 (90.6)	237 (83.2)	1621 (87.2)	0.0006
Enhanced my knowledge	425 (85)	835 (91.6)	144 (90.6)	245 (86.9)	1649 (89)	0.0012
Satisfied my learning ambition	341 (68.2)	655 (72.1)	123 (77.8)	194 (69.5)	1313 (71.1)	0.0984
Improved my patients' outcomes	374 (74.5)	749 (82.3)	124 (78)	211 (75.5)	1458 (78.8)	0.0025

Health Sector						
Item	MOH (n=572)	Private (n=1108)	University hospital (n=201)	RMS (n=323)	Total (n=1861)	P-value
Improved my patients and family satisfaction	375 (74.7)	706 (78.1)	116 (73)	207 (72.6)	1404 (75.9)	0.1579

Table D13: Summary of CPD impact by profession. Numbers in parentheses are percentages

Profession							
Item	Physician (n=457)	Dentist (n=400)	Pharmacist (n=433)	Nurse (n=462)	Allied HCP (n=452)	Total (n=2179)	P-value
Changed my attitude	388 (85.1)	310 (79.7)	379 (88.3)	402 (88)	342 (76.3)	1821 (83.6)	0
Changed my work practices	419 (92.1)	355 (90.3)	403 (93.5)	408 (89.9)	388 (86.6)	1973 (90.5)	0.0075
Improved relation with my colleagues	404 (89.2)	331 (84.4)	365 (85.5)	415 (91.4)	402 (89.9)	1917 (88.2)	0.0056
Improved my practical skills	384 (85.1)	336 (85.7)	341 (79.1)	380 (83.9)	368 (82.3)	1809 (83.2)	0.074
Enhanced my knowledge	400 (88.1)	339 (86.3)	352 (82.1)	405 (89.6)	399 (89.1)	1895 (87.1)	0.006
Satisfied my learning ambition	415 (91)	357 (91.1)	388 (90.7)	411 (90.1)	418 (93.3)	1989 (91.2)	0.5065
Improved my patients' outcomes	424 (93.2)	368 (93.6)	398 (92.8)	419 (92.5)	412 (92.2)	2021 (92.8)	0.9324
Improved my patients and family satisfaction	422 (93)	357 (90.8)	391 (90.7)	410 (89.9)	407 (91.5)	1987 (91.2)	0.5748
Changed my attitude	420 (92.9)	364 (92.6)	396 (92.1)	418 (91.9)	411 (92.8)	2009 (92.5)	0.9708
Changed my work practices	430 (94.1)	363 (92.4)	382 (89)	408 (90.3)	415 (92.6)	1998 (91.7)	0.0525

Table D14: Summary of CPD barriers by health sector. Averages are reported in this table.

Health Sector					
Item	MOH	Private	University Hospital	RMS	P-value
Satisfaction with my field knowledge	3.37	3.43	3.26	3.56	0.004
Unavailable interesting activities	3.48	3.67	3.61	3.58	0.0012

Health Sector					
Item	MOH	Private	University Hospital	RMS	P-value
Ability to obtain work leaves	3.39	3.66	3.56	3.5	0.0001
Event cost (fees)	3.75	3.86	3.77	3.77	0.1843
Limited funds	3.83	3.93	3.84	3.79	0.0655
Lack of encouragement (from colleagues, employer, etc.)	3.57	3.58	3.55	3.61	0.9068
Staff shortage and workload	4.02	3.81	4.12	4.1	0
Irrelevant topics covered	3.32	3.31	3.25	3.49	0.0269
Lack of time	3.75	3.94	3.8	3.9	0.0013
CPD is not mandatory	3.42	3.34	3.48	3.41	0.3051
Lack of CPD resources/activities	3.74	3.68	3.81	3.7	0.2894
Family responsibilities	3.56	3.67	3.58	3.89	0.0001
Remoteness	3.53	3.56	3.38	3.7	0.0185

Table D15: Summary of CPD barriers by profession. Averages are reported in this table.

Health Sector						
Item	Physician	Dentist	Pharmacist	Nurse	Allied HCP	P-value
Satisfaction with my field knowledge	3.42	3.23	3.46	3.66	3.29	0
Unavailable interesting activities	3.64	3.53	3.76	3.54	3.54	0.0008
Ability to obtain work leaves	3.59	3.57	3.73	3.57	3.34	0
Event cost (fees)	3.85	4.09	3.77	3.78	3.59	0
Limited funds	3.94	4.07	3.83	3.85	3.71	0
Lack of encouragement (from colleagues, employer, etc.)	3.64	3.42	3.63	3.64	3.53	0.008
Staff shortage and workload	4.04	3.65	3.94	4.03	3.99	0
Irrelevant topics covered	3.41	3.26	3.28	3.41	3.29	0.0663
Lack of time	3.87	3.85	4.03	3.87	3.75	0.0014
CPD is not mandatory	3.46	3.11	3.34	3.6	3.37	0
Lack of CPD resources/activities	3.81	3.63	3.68	3.69	3.71	0.0912
Family responsibilities	3.74	3.6	3.7	3.76	3.5	0.0011
Remoteness	3.57	3.29	3.61	3.67	3.61	0

Table D16: Summary of willingness to participate in CPD activities by health sector. Averages are reported in this table.

Health Sector					
Item	MOH	Private	University hospital	RMS	P-value
Lectures in large group setting	3.78	3.69	3.8	3.8	0.1075
Small group interactive setting	3.91	3.8	3.8	3.74	0.0581
Interactive computer programs	3.72	3.63	3.73	3.61	0.1805
Journal or internet reading activity	3.78	3.92	3.86	3.84	0.038
National conferences	3.71	3.58	3.56	3.67	0.0759
International conferences	3.69	3.63	3.72	3.54	0.2578
Research based activities	3.51	3.42	3.52	3.52	0.3756

D17: Summary of willingness to participate in CPD activities by profession. Averages are reported in this table.

Profession						
Item	Physician	Dentist	Pharmacist	Nurse	Allied HCP	P-value
Lectures in large group setting	3.81	3.75	3.69	3.8	3.64	0.0415
Small group interactive setting	3.97	3.93	3.72	3.78	3.7	0
Interactive computer programs	3.8	3.5	3.68	3.63	3.66	0.0009
Journal or internet reading activity	4.02	3.99	3.91	3.69	3.74	0
National conferences	3.87	3.87	3.43	3.45	3.53	0
International conferences	4.08	3.81	3.51	3.43	3.37	0
Research based activities	3.73	3.43	3.44	3.33	3.39	0

Table D18: Summary of CPD interests by health sector. Numbers in parentheses are percentages

Health Sector							
Factor	Category	MOH (n=572)	Private (n=1108)	University hospital (n=201)	RMS (n=323)	Total (n=2204)	P-value
Clinical content	Very Interested	193 (35.5)	501 (46.3)	97 (48.3)	106 (35.6)	897 (42.2)	0
	Moderately Interested	200 (36.8)	338 (31.2)	57 (28.4)	101 (33.9)	696 (32.8)	
	Slightly Interested	112 (20.6)	149 (13.8)	33 (16.4)	59 (19.8)	353 (16.6)	

Health Sector							
Factor	Category	MOH (n=572)	Private (n=1108)	University hospital (n=201)	RMS (n=323)	Total (n=2204)	P- value
	Not Interested	38 (7)	94 (8.7)	14 (7)	32 (10.7)	178 (8.4)	
Professional content	Very Interested	214 (39.1)	493 (45.4)	80 (39.8)	128 (43.4)	915 (43)	0.0075
	Moderately Interested	212 (38.8)	327 (30.1)	83 (41.3)	101 (34.2)	723 (34)	
	Slightly Interested	94 (17.2)	183 (16.9)	27 (13.4)	51 (17.3)	355 (16.7)	
	Not Interested	27 (4.9)	83 (7.6)	11 (5.5)	15 (5.1)	136 (6.4)	
Education/supervising	Very Interested	206 (37.9)	372 (34.4)	78 (38.8)	118 (39.9)	774 (36.5)	0.0009
	Moderately Interested	203 (37.4)	406 (37.5)	91 (45.3)	116 (39.2)	815 (38.5)	
	Slightly Interested	109 (20.1)	208 (19.2)	20 (10)	48 (16.2)	385 (18.1)	
	Not Interested	25 (4.6)	96 (8.9)	12 (6)	14 (4.7)	147 (6.9)	
Enhancing skills in evidence-informed practice	Very Interested	255 (47)	476 (43.9)	104 (51.7)	127 (42.3)	962 (45.2)	0.004
	Moderately Interested	179 (33)	402 (37.1)	71 (35.3)	119 (39.7)	771 (36.2)	
	Slightly Interested	89 (16.4)	126 (11.6)	20 (10)	44 (14.7)	279 (13.1)	
	Not Interested	20 (3.7)	81 (7.5)	6 (3)	10 (3.3)	117 (5.5)	
Managerial skills	Very Interested	175 (31.9)	361 (33.3)	68 (34)	115 (38.7)	719 (33.8)	0.1011
	Moderately Interested	213 (38.9)	402 (37.1)	78 (39)	118 (39.7)	811 (38.1)	
	Slightly Interested	121 (22.1)	218 (20.1)	43 (21.5)	49 (16.5)	431 (20.3)	
	Not Interested	39 (7.1)	102 (9.4)	11 (5.5)	15 (5.1)	167 (7.8)	
Health/medical informatics	Very Interested	243 (44.3)	555 (51.2)	102 (50.7)	143 (47.5)	1043 (48.9)	0.0391
	Moderately Interested	207 (37.8)	340 (31.4)	72 (35.8)	109 (36.2)	728 (34.1)	
	Slightly Interested	80 (14.6)	130 (12)	20 (10)	32 (10.6)	262 (12.3)	
	Not Interested	18 (3.3)	59 (5.4)	7 (3.5)	17 (5.6)	101 (4.7)	

Table D19: Summary of CPD interests by profession. Numbers in parentheses are percentages

Factor	Category	Profession					Total (n=2204)	P-value
		Physician (n=457)	Dentist (n=400)	Pharmacist (n=433)	Nurse (n=462)	Allied HCP (n=452)		
Clinical content	Very Interested	224 (50.1)	251 (65)	178 (42.5)	116 (26.2)	128 (29.8)	897 (42.2)	0
	Moderately Interested	142 (31.8)	98 (25.4)	146 (34.8)	145 (32.8)	165 (38.4)	696 (32.8)	
	Slightly Interested	50 (11.2)	22 (5.7)	62 (14.8)	133 (30.1)	86 (20)	353 (16.6)	
	Not Interested	31 (6.9)	15 (3.9)	33 (7.9)	48 (10.9)	51 (11.9)	178 (8.4)	
Professional content	Very Interested	181 (40.5)	145 (37.6)	214 (51)	166 (37.6)	209 (48)	915 (43)	0.0001
	Moderately Interested	161 (36)	151 (39.1)	121 (28.8)	152 (34.5)	138 (31.7)	723 (34)	
	Slightly Interested	87 (19.5)	60 (15.5)	54 (12.9)	92 (20.9)	62 (14.3)	355 (16.7)	
	Not Interested	18 (4)	30 (7.8)	31 (7.4)	31 (7)	26 (6)	136 (6.4)	
Education/supervising	Very Interested	182 (40.9)	113 (29.4)	147 (35.1)	161 (36.7)	171 (39.4)	774 (36.5)	0.0043
	Moderately Interested	174 (39.1)	161 (41.8)	167 (39.9)	154 (35.1)	160 (36.9)	816 (38.5)	
	Slightly Interested	66 (14.8)	75 (19.5)	68 (16.2)	97 (22.1)	79 (18.2)	385 (18.1)	
	Not Interested	23 (5.2)	36 (9.4)	37 (8.8)	27 (6.2)	24 (5.5)	147 (6.9)	
Enhancing skills in evidence-informed practice	Very Interested	238 (52.9)	176 (45.7)	180 (43)	173 (39.3)	195 (44.8)	962 (45.2)	0.0043
	Moderately Interested	146 (32.4)	140 (36.4)	161 (38.4)	167 (38)	157 (36.1)	771 (36.2)	
	Slightly Interested	44 (9.8)	45 (11.7)	53 (12.6)	81 (18.4)	56 (12.9)	279 (13.1)	
	Not Interested	22 (4.9)	24 (6.2)	25 (6)	19 (4.3)	27 (6.2)	117 (5.5)	
Managerial skills	Very Interested	140 (31.4)	100 (26)	156 (37.2)	170 (38.5)	153 (35.1)	719 (33.8)	0.0027

Profession								
Factor	Category	Physician (n=457)	Dentist (n=400)	Pharmacist (n=433)	Nurse (n=462)	Allied HCP (n=452)	Total (n=2204)	P-value
	Moderately Interested	166 (37.2)	154 (40)	164 (39.1)	150 (33.9)	177 (40.6)	811 (38.1)	
	Slightly Interested	100 (22.4)	94 (24.4)	66 (15.8)	94 (21.3)	77 (17.7)	431 (20.3)	
	Not Interested	40 (9)	37 (9.6)	33 (7.9)	28 (6.3)	29 (6.7)	167 (7.8)	
Health/medical informatics	Very Interested	206 (45.7)	172 (44.7)	233 (55.7)	203 (45.7)	229 (52.6)	1043 (48.9)	0.0065
	Moderately Interested	169 (37.5)	149 (38.7)	128 (30.5)	147 (33.1)	135 (31)	728 (34.1)	
	Slightly Interested	59 (13.1)	44 (11.4)	37 (8.8)	73 (16.4)	49 (11.3)	262 (12.3)	
	Not Interested	17 (3.8)	20 (5.2)	21 (5)	21 (4.7)	22 (5.1)	101 (4.7)	

Annex D.2. Extra Figures

Figure D.1. Summary of participant's current practices by gender. Numbers in parentheses are p-values for testing differences among male and female responses

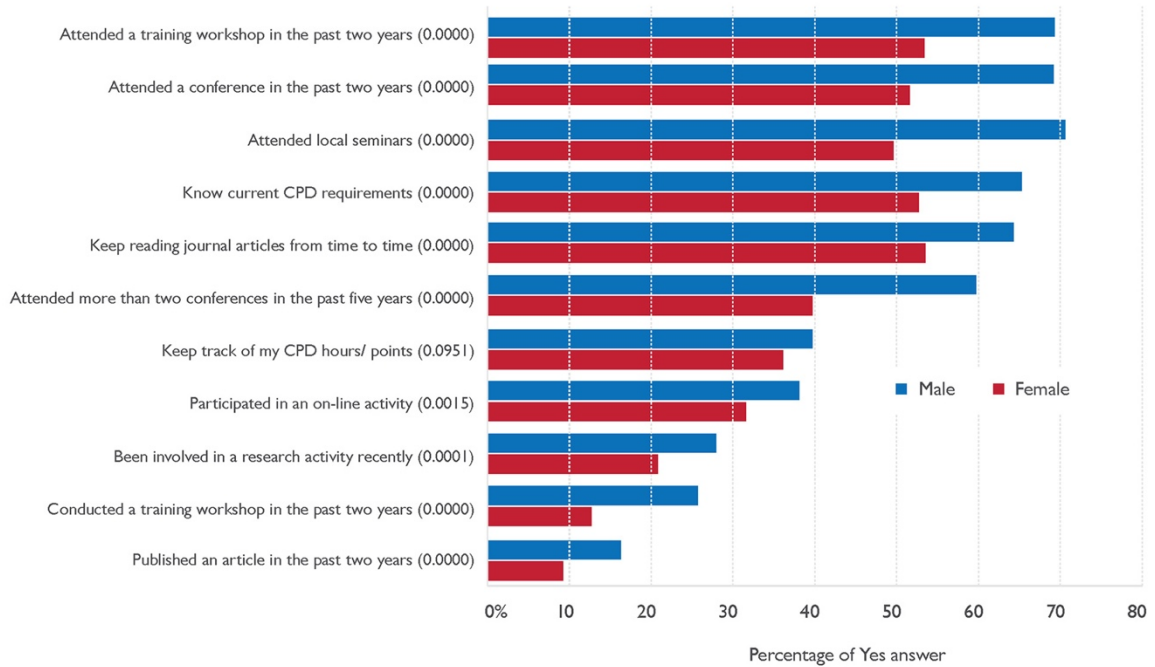


Figure D.2. Summary of participant's responses to the department/section policy item by health sector

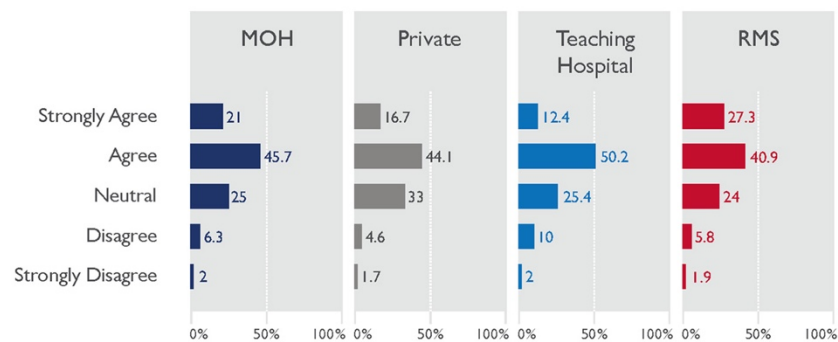


Figure D.3. Summary of participant's responses to department/section policy item by profession

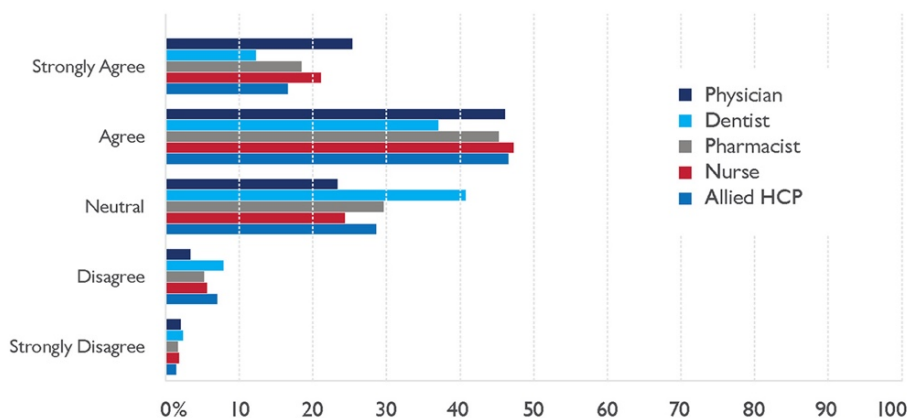


Figure D.4. Barriers to CPD by gender

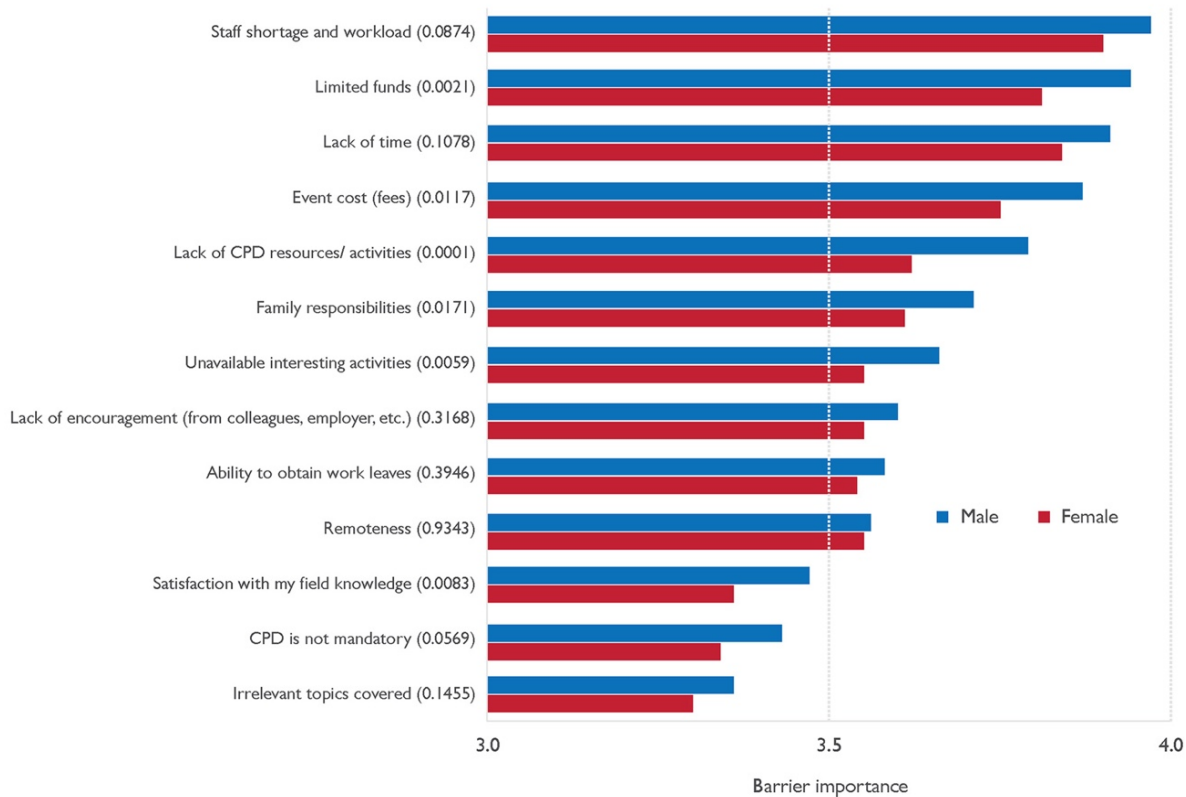


Figure D.5. Barriers to CPD by Governorate

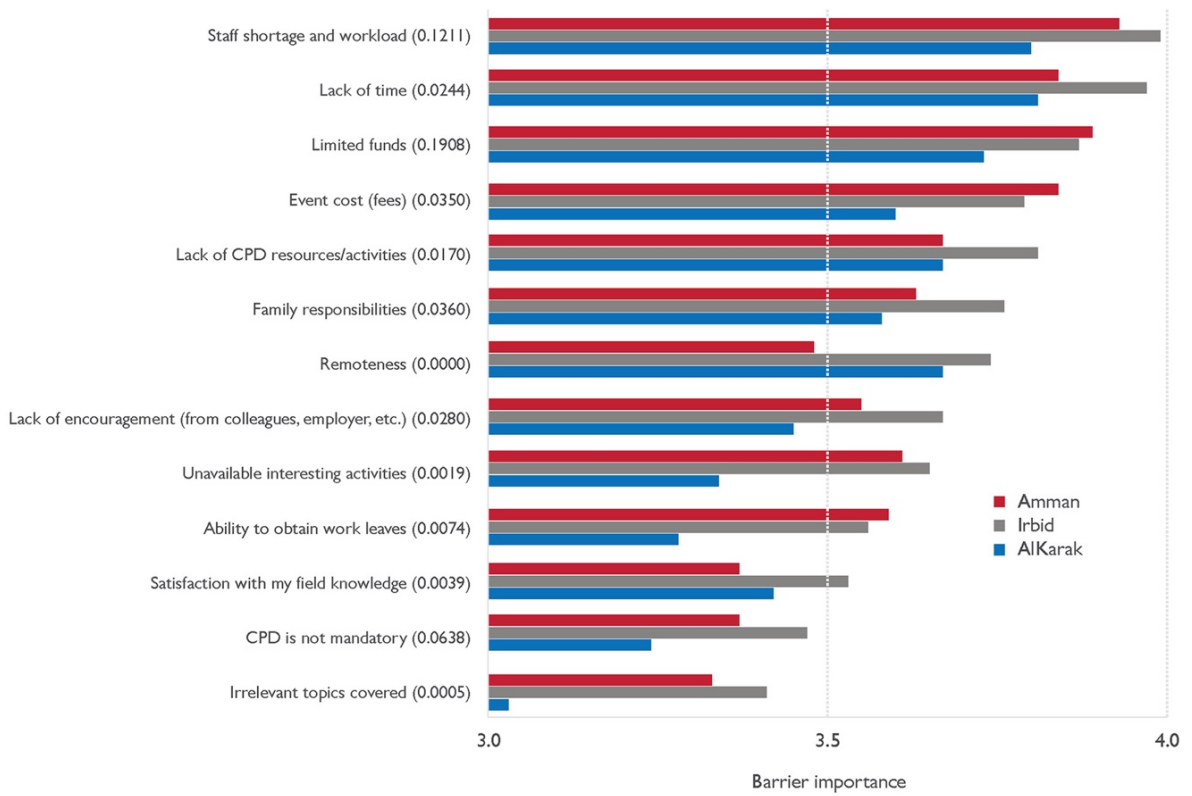


Figure D.6. Summary of CPD design priorities by gender

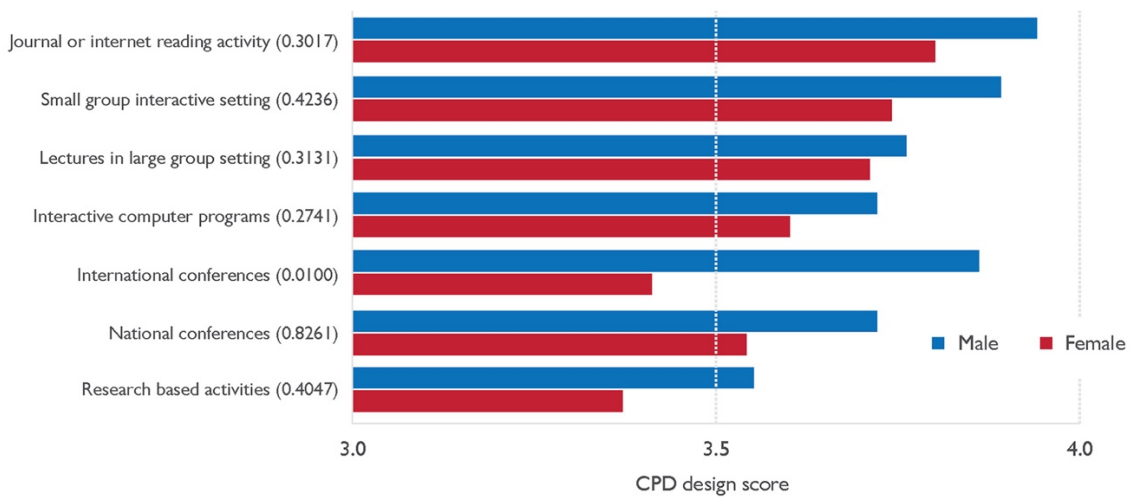


Figure D.7. Proportion of very and moderately interested responses for CPD topics by gender

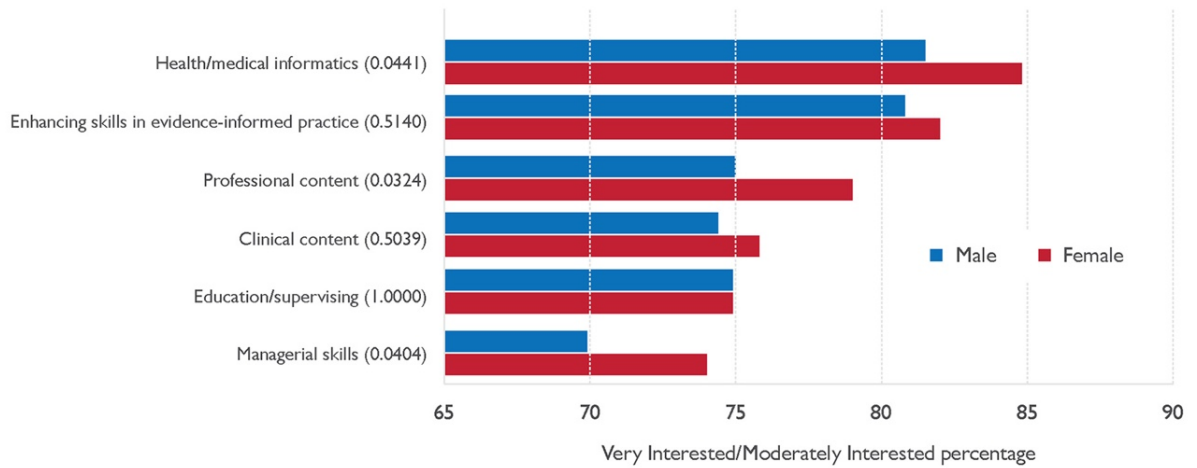


Figure D.8. Proportion of very and moderately interested responses for CPD topics by governorate

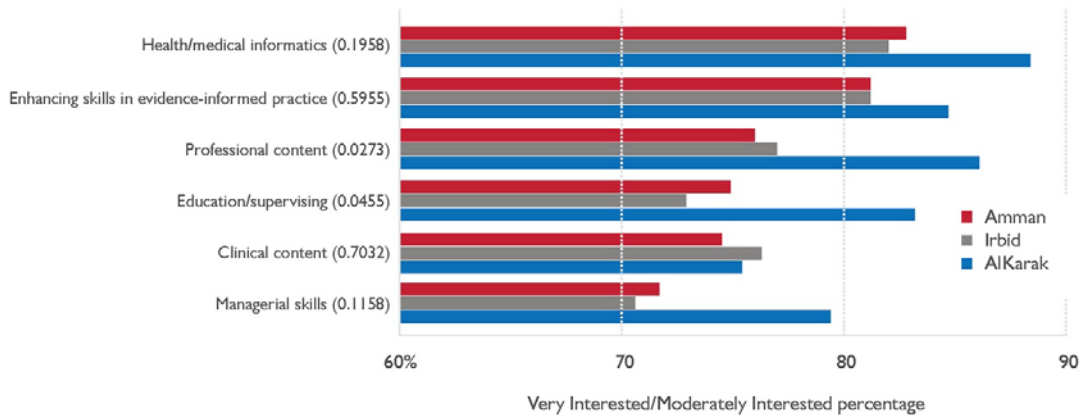


Figure D.9. Proportion of very and moderately interested responses for CPD topics by age group

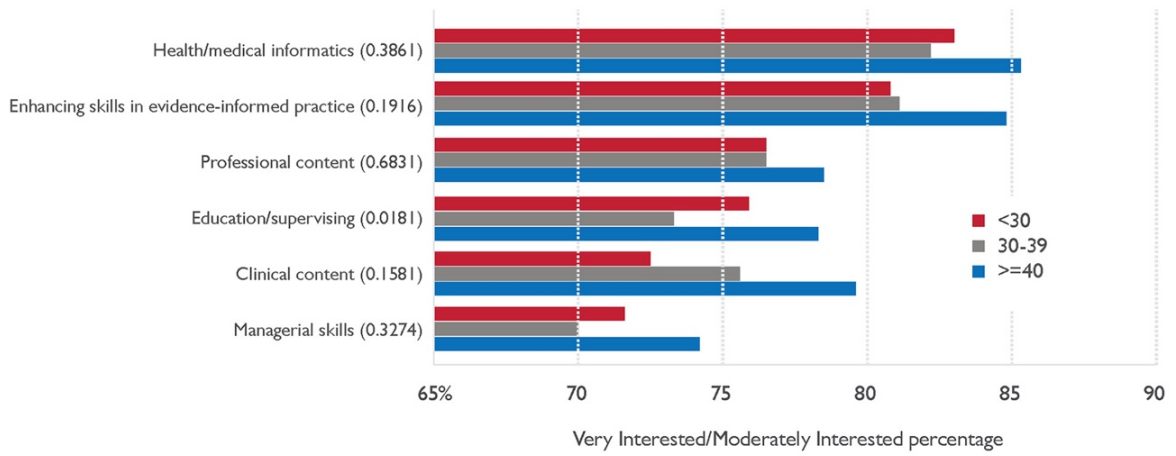
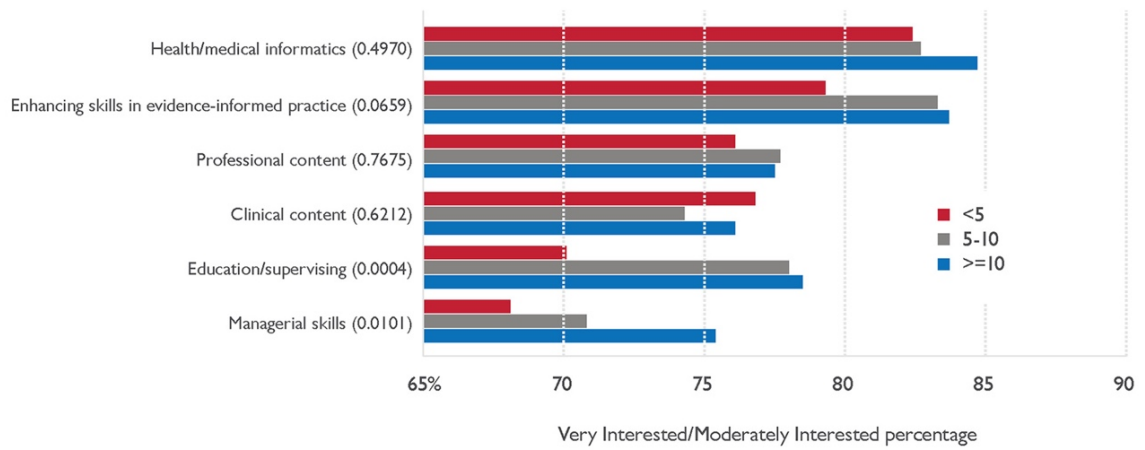


Figure D.10. Proportion of very and moderately interested responses for CPD topics by years of experience



Annex D.3. Definitions and Sample Size Calculation

Definitions of Research Variables

Allied health professionals: is a term used to describe healthcare professionals who are not doctors, pharmacists, nurses or dentists. Examples of allied health professionals include laboratory technicians, physical therapists, occupational therapists, dietitians, and respiratory therapists.

CPD is defined as “the wide-ranging competencies beyond clinical update, research and scientific writing, the multidisciplinary context of patient care, ethical practice, communication, management and behavioral skills, team building, information technology, audit, and appropriate attitudinal change to ensure improved patient outcomes and satisfaction” (WHO, 2010).

CPD Practices: are defined as the various areas or activities of CPD that healthcare professionals can undertake.

Effectiveness of CPD: is defined as the positive changes in the totality of professional practice at both clinical and personal levels (Schostak, et al., 2010).

Healthcare Professionals: is a term used to describe staff working at healthcare facilities who are doctors, pharmacists, nurses, dentists, and allied health professionals at the different healthcare sectors.

Participation in CPD: is defined as engagement of healthcare professionals in CPD activities such as conference, workshops, training, etc.

Calculation of sample size methodology

Assuming a 5% margin of error and 5% significance level, required sample sizes for healthcare professions are also shown in Table D.1 in Annex D.1. Required sample sizes have been estimated as:

$$n = \frac{z^2 p(1-p)}{2E}$$

where:

- n= is the desired sample size
- p= proportion to be estimated (we used 0.5 as this will provide the maximum required sample size)
- Z= the normal distribution Z-score for a given significance level
- E= error margin

For finite populations the required sample size is corrected using the following formula:

$$n_{finite} = \frac{n}{1 + n/N} \text{ where } N \text{ is the population size.}$$