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The American University in Cairo

School of Global Affairs and Public Policy (GAPP)

**Continuing Professional Development in the Healthcare  
Sector in Egypt: A Readiness Assessment**

A Thesis Submitted to the  
Public Policy and Administration Department  
In partial fulfillment of the requirements for the degree of  
Master of Public Administration

By

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Under the supervision of

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Fall 2017

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The American University in Cairo

School of Global Affairs and Public Policy

Department of Public Policy and Administration

**CONTINUING PROFESSIONAL DEVELOPMENT (CPD) IN THE  
HEALTHCARE SECTOR IN EGYPT: A READINESS ASSESSMENT**

Mahmoud Fathi Nassar

Supervised by Professor Laila El Baradei

**ABSTRACT**

The quality of healthcare services in Egypt is lacking and there is room for improvement. One proposed strategy for improvement is the investment in Continuing Professional Development (CPD) of its healthcare staff. This thesis aims at assessing the degree of readiness and acceptance for CPD in the Egyptian healthcare sector and what can be done for effective implementation for improving the quality of healthcare services and patient safety. The qualitative analysis methodology was used. The data were collected through interviews using semi-structured open-ended questions. The questions were built based on the literature review data, observations, and pilot study. The sampling method was non-random and purposive. The target was representative of stakeholder groups who affect and are affected by CPD. Ten Semi-structured interviews were conducted, which included, for example, officials from the general medical syndicate, Dean of the faculty of medicine of a public university, a representative from the Ministry of Health (MoH) and physicians from universities, public hospitals, and other relevant organizations in greater Cairo. The main finding of the study revealed that physicians are motivated for CPD. Books and online search are the main methods for CDP. Young physicians prefer online-search to get the information, but elder physicians prefer to read hard copy books. E-learning courses and websites are not popular among Egyptian physicians. Time, cost and infrastructures are the main challenges for CPD. Physicians need more practical courses and hand on training, rather than just relying on theoretical lectures. Practical training inside the MoH hospitals

needs more improvement. There is a limited motivation to develop Egyptian credit hour system now, as there is no system to renew physicians' license to practice in Egypt. Physicians are not motivated to collect credit hours in Egypt, that is not related to credit hours' cost but it is related to usage of these credit hours. International medical certifications are popular among Egyptian physicians, which are an alternative to Ph.D. degree for non-academic physicians. Based on the literature review and field work, the study develops a readiness assessment framework, ends up with a number of suggested areas for improvement, in addition to a draft action plan and Gantt chart.

**Keywords:** Continuing Professional Development (CPD), CME, Egyptian healthcare sector, healthcare services, patient safety, physicians

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## **LIST OF ACRONYMS**

AAFP	American Academy of Family Physicians.
AHA	American Heart Association.
ALS	Advanced Life Support.
AMA	American Medical Association.
ARMC	Academy of Royal Medical Colleges.
BLS	Basic Life Support.
CBC	Complete Blood Count.
CME	Continuing Medical Education.
CPD	Continuing Professional Development.
CQI	Continuous Quality Improvement.
CT	Computed Tomography.
ENT	Ear, Nose, and Throat.
GP	General Practitioner
KSA	Kingdom of Saudi Arabia.
IELTS	International English Language Testing System.
IOM	Institute of Medicine.
ISO	International Organization for Standardization.
MCQ	Multiple Choice Questions.
MRCP	Membership of the Royal Colleges of Physicians.

MRCs	Membership of the Royal Colleges of Surgeons.
MRI	Magnetic Resonance Imaging.
MOE	Ministry of Education.
MoH	Ministry of Health.
MoHE	Ministry of Higher Education.
MOOC	Massive Open Online Courses.
NTI	National Training Institute.
OSCE	Objective Structured Clinical Examination.
PLAB	Professional and Linguistic Assessments Board.
PRA	Physician Recognized Awards.
SDL	Self-Directed Learning.
TOEFL	Test of English as a Foreign Language.
USMLE	United State Medical License Exam.

**Chapter 1: INTRODUCTION AND PROBLEM  
STATEMENT  
I-INTRODUCTION**

The Continuing Professional Development (CPD) can be defined as ongoing education and training activities through formal or informal setting in order to help physicians acquire, maintain and develop clinical practice skills, knowledge, and attitude. It helps in keeping physicians' knowledge updated (ARMC, 1999). CPD is an important topic in a discipline that continuously gets updated, such as healthcare (medicine, nursing, pharmacy, and dentistry). Every day, the latest updates are being published regarding diagnosis, investigations, and treatment.

Many developed as well as developing countries are working hard to ensure that healthcare employees develop their knowledge and skills by creating policies and regulations for CPD. Countries use different methods and policies to motivate or obligate physicians to participate in CPD. CPD necessitates physicians to maintain a learning portfolio based on practice-based learning experience. This portfolio is checked at the time of promotion (general practitioner, specialist, and consultant). In addition, it is used for renewing the practice license. No formal CPD system exists in Egypt. However, in the region, many Gulf and African countries are implementing this system, especially for healthcare employees.

Healthcare quality improvement is a dominating topic for healthcare reforms in Middle East region (El-Jardali, 2007). The call for healthcare reforms may be a result of either internal or external needs, and may be comprehensive or limited in scope (Polidano, 2001). There are many instruments that could be utilized to enhance quality and improve performance of care and patient safety, which include hospital accreditation, personnel certification, 6-sigma (quality improvement tools used to decrease waste and reduce variation), strategic management, balanced scorecard,

Kaizen (the Japanese tool for continuous improvement), performance enhancement, and process re-engineering (McCann, 2013).

## **II- PROBLEM STATEMENT**

There are many channels providing healthcare services for Egyptians, which include free public hospitals, university hospitals, specialized healthcare centers, insurance, and private hospitals (El-Shazly et al., 2000). The private sector has established various private hospitals after the open door economic liberalization policy since 1974 (Mostafa, 2001) in order to meet the huge increase in population and lack of government supply such as medications, gloves and saline solutions. Private hospitals provide services at a very high price, which is suitable only for top economic class citizens.

Egypt healthcare quality services have many prospects for improvement owing to lack of trained staff, equipment, and infrastructure. These areas need more attention of the government (Mostafa, 2005). Healthcare providers should meet the customers' needs and expectations in accordance with international standards and guidelines. Balance between quality, risk and time is a critical success factor (Baltussen and Ye, 2006).

According to the Global Competitiveness Report (GCR) 2015–2016, Egypt has serious issues in higher education and training (ranking 111 out of 140), which has led to low innovation (120 out of 140). The worst ranking of Egypt was in the labor market efficiency and macroeconomic environment, which was 137 out of 140. Labor market efficiency is the result of education and macroeconomic environment created by policy makers and politicians. There is also a serious issue with the quality of education (139 out of 140). Definitely, education should be top priority on Egypt's reforms agenda.

## **A-Research Questions**

The main research question is:

*To what extent is there readiness and acceptance for Continuous Professional Development (CPD) in the Egyptian healthcare sector? Also, what is needed for effective implementation?*

This main research question can have several sub-questions.

- Are physicians sufficiently motivated to be involved in CPD in Egypt in all its forms?
- What are the challenges for using CPD in Egypt?
- How can Egypt best adopt a CPD system?
- What are the recommendations for successful implementation of CPD in the healthcare system in Egypt?

## **B-Aim of the study**

The study's main aim is to assess the degree of readiness and acceptance for CPD in the Egyptian healthcare sector and what can be done for effective implementation to improve quality of healthcare services and patient safety.

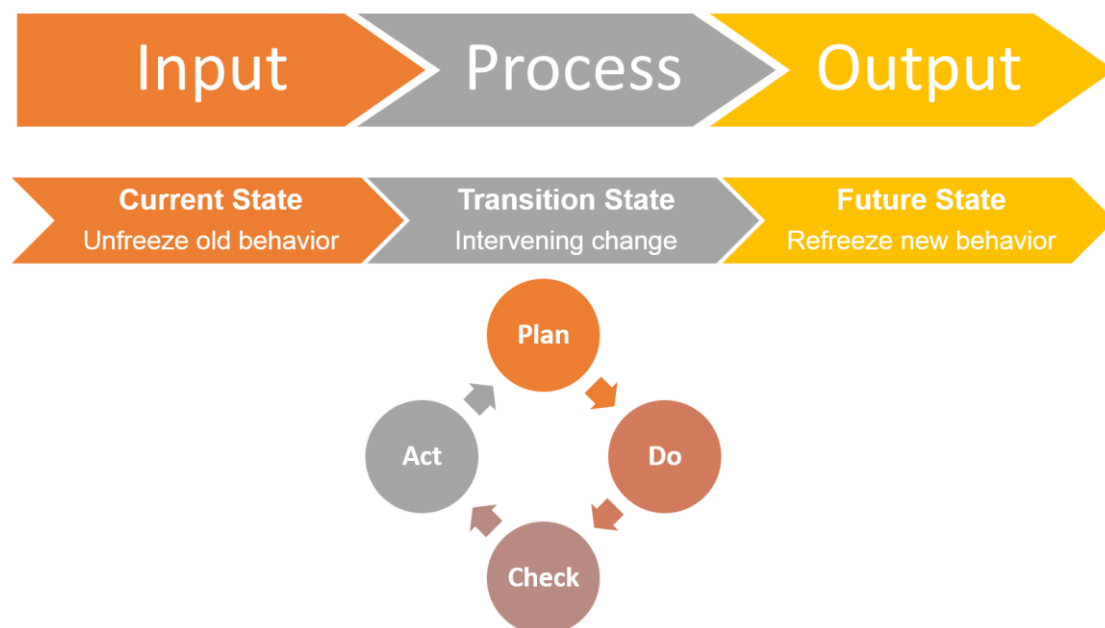
Other aims encompass:

- To understand motivation and direction of healthcare employees regarding CPD.
- To identify common methods for developing CPD being used by physician in diverse sectors of healthcare organization.
- To evaluate acceptance of healthcare employees in Egypt to E-Learning system.
- To identify the challenges of using CPD in Egypt.
- To provide recommendations for decision makers to facilitate CPD activities in Egypt.

## Chapter 2: CONCEPTUAL FRAMEWORK

### A-Comprehensive model

CPD is continuous lifelong process. Physicians may show resistance to change some medical concepts during learning activities so they should unfreeze the old concepts and behavior to be ready to participate in learning activities. Then they are transferred to transitional state where they involve in learning process to master the new skills. After that they should freeze these concepts and move to another area for improvement. Moving from unfreeze the old concepts to refreeze the new concepts may take several years. This may need several types of learning activities also. The output of the learning activity is the input of the next learning activity because the physicians identify new area for improvement (see Figure 1).



*Figure 1: Integrated model Adopted by the study author*

Source: Adapted from (Smith, 2004; Campbell, Roland, and Buetow, 2000; Nancy, 2004)



Donabedian (1980) developed a framework of healthcare quality. He identified and created links between inputs, processes, and outcomes of healthcare services. Inputs included facilities, equipment, human resources, organizational structure, accessibility, judgment skills, and available technology. The processes included clinical care, patient-provider relationship, diagnosis, treatment, communication, trust, concern, and honesty, whereas the outcomes included changes in patient health status, and patient satisfaction. All these are shown in figure 1.

There is an association between the input of proven medical treatment based on evidence-based medicine and patient outcome (Donabedian, 1980) that was the base of quality improvement in healthcare sector services (Campbell, Roland, and Buetow, 2000; Smith, Simms, Hagland, Freyer, and Voss, 2004; White, 1992).

Evidence based medicine and recent guidelines are the cornerstones of CPD. Any CPD program or activity should be reviewed every few months to ensure that the core message is still valid and up-to-date. The guidelines should be recommended by a scientific society or governmental agency in the target region in order to ensure widespread of this recommendation and to make certain that it is not conflicting with other guidelines. Some countries have developed a local recommendation or clinical pathway to be more suitable to the local infrastructure covering diagnostic tools, available medication, cost, and physicians' experience.

The training methods are different; lecture, workshop, hands-on, one to one or virtual through the internet. Every training message should use the appropriate method, such as hand-on and one to one for surgical techniques, lectures and virtual training for internal medicine and theoretical knowledge. The inputs of the transfer process encompass training design, trainee characteristics, and transfer climate (Holton, 1996).

Certain technology and medical equipment should be available at the training place and healthcare facility. Physicians may get hand-on training overseas, but they do not use it when they return to their work places. So, they will lose it with the passage of time. Trainers should have certain skills, knowledge, and attitude to be qualified as trainers.

CPD based on the recent clinical guidelines and evidence-based medicine is the input. It comes under the umbrella of human resource management with education, clinical training, and experience. This input has significant impact on the process of care, which is expected to lead to good clinical outcome and patient satisfaction.

Every training program should have clear and specific goals to be achieved. The training process should manage all inputs in a befitting manner. Trainer, administrator and healthcare facilities should collaborate to ensure that the training process can achieve the goals. The process should be dynamic according to skills, age, and experience of the trainees.

The training outcome should be specific and measurable. The baseline assessment should be done before the program. According to this assessment, the appropriate program can be selected. Clinical outcome includes cure of the disease, complication, infection, or death. Patient satisfaction includes family satisfaction as well. The performance improvement includes all aspects of healthcare.

The change model of Kurt Lewin has an enhanced influence on the organizational psychology. The motivation for change should be the first step. It is based on force field between the pros and cons of the change. It has three main stages; unfreezing, Intervention, and refreezing (Figure 1) (Accel-team, 2004; Smith, 2004).

This model can be implemented on CPD. Physicians need to unfreeze their knowledge and practice or old management behavior to diminish resistance and to be able to learn additional information and skills. Resistance of elderly physicians comes from the inability to unfreeze their old behavior.

Transitional state is the period which physicians learn and practice to master the new skills and then freezing and standardizing the updated method by creating policy and procedure.

Force field analysis is a quality improvement tool. It can be used to identify the pros and cons, or driving and resistance forces. Pro is the force to support the change, whereas con is the force to resist the change. The change can be implemented if the pro force exceeds the con force. Understanding and identifying factors affecting the change can facilitate the change process by enhancing the pro force and eliminating the con force. Team participation and systematic thinking can be used after force field analysis (Barrick, 2009). This model will be used to analyze the motivation of healthcare employees for changing the CPD system in Egypt by using force field analysis.

Healthcare is a complex process. It requires participation from many stakeholders from different departments in many simultaneous processes at the same time. Every patient is a unique case, who needs to have customized services according to age, sex, complaint, comorbidity (one or more medical disorder co-occurring), family history, religion, and beliefs. Medical education depends on the type, amount, sources of information, the recall, or implementation of this knowledge, which is the most crucial factor. All these factors are challenges for providing high-quality healthcare services (Bohmer, 2009).

Continuous Quality Improvement (CQI) was started in industry field in the 1920s by a USA company. In the 1940s, Motorola implemented this CQI concept. Deming's management system introduced statistical tools, such as a run chart, control chart, and process control with wide scale in the industrial field. In the 1970s, Juran (He was an evangelist for quality and quality management, having written several books on those subjects) continued work on developing quality concepts and tools. In 2010, Healthcare started to get attention due to patient safety issues (Fallon and Begun, 2013).

Healthcare Quality Improvement is a dominating topic for healthcare reforms in many countries in the Middle East (El- Jardali, 2007). Avedias Donabedian determined factors for defined quality in healthcare; practitioner assessment only or patient assessment; maximum or optimal effective care is the target, where optimum is for individual or society (Donabedian, 1988). Juran defined quality as two factors;

freedom from deficiency and product feature to achieve customer satisfaction (Juran, 1993).

The Medicare defined quality as “the right care for every person every time” by “making care safe, effective, efficient, patient-centered, timely, and equitable” (Brune, 2011).

USA governmental organization named Agency for Healthcare Research and Quality (AHRQ) defined the quality of health services as Healthcare that is accessible, effective, safe, accountable, and fair (Hasin, 2011).

Institute of Medicine (IOM) defined the quality of care after reviewing many definitions as “the degree to which health services for individual and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Lohr, 1990). This quality definition will be used in this study of care as defined by IOM.

The patient is the ultimate customer, for whom the entire process is designed to serve. At the same time, the patient is not the only customer. There are many customers who can be divided into internal and external customers. Internal customers are all employees inside the organization, such as physicians, nurses, pharmacists, and technicians, etc. However, the external customers are other stakeholders outside the organization, such as MoH, labs, private physicians, patient, patient family, and medical suppliers. Identifying customers is a critical step to ensure the success of any quality initiative. In general, the customer can be defined as “the receiver of a provided service and/or product” (Sollecito and Johnson, 2013). In CPD, the patient is the ultimate customer, because physician CPD activities will provide more professional and safe service for the patients. CPD activities will affect the patient indirectly.

The Plan–Do–Check–Act (PDCA) cycle, Deming cycle or Shewhart cycle can be used in CPD which is a continuous process. Physicians plan to develop their skills, select the course and allocate the resources (PLAN). They get the course and information (DO). Physicians evaluate the acquired knowledge and skill, define the area for improvement (CHECK). Then they plan for new training activities (DO).

## **B-Definition of Terms**

### **- Continuing Professional Development (CPD):**

Continuing Professional Development (CPD) is also known as Continuing Physician Professional Development (CPPD). It describes physician activities to acquire knowledge and information, which are not limited to medical knowledge only, but they also deal with team management, leadership, communication skills, and patient safety. CPD is not about how physicians acquire knowledge, rather it concerns with how to keep learning during their career (Kuehn, 2010).

Academy of Royal Medical Colleges (ARMC) defined CPD as ongoing education and training activities through formal or informal settings to help physicians acquire, maintain and develop clinical practice skills, knowledge, and attitudes. It helps in keeping physicians' knowledge updated (ARMC., 1999). This study will use ARMC definition for CPD because it differentiated between formal setting as academic studies and informal setting as personal development.

**-Massive Open Online Courses (MOOC):** “These are online courses with optional free and open registration and publicly shared curriculum and open-ended outcomes. MOOC integrate social networking and resources and are facilitated by practitioners in the field of study” (McAuley et al., 2010: 10).

### **- Self-Directed Learning (SDL):**

It can be defined as “the process whereby individuals take the initiative, with or without help of others, in diagnosis learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating learning outcome” (Knowles, 1975: 18).

It can be defined as the combination between trainee personal characteristics and external education process (Brockett and Hiemstra, 1991).

**- Accreditation:** “Accreditation is a course of action, wherein an organization outside the health care organization, usually non-governmental, evaluates the organization to

determine if it meets a set of standards designed to improve quality of care” (Joint Commission International Accreditation, 2003).

- The quality of care: “The degree to which health services for individual and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Lohr, 1990).

- Service quality: It is “the extent of discrepancy between customer expectations/desires and perceptions” (Zeithamlet et al., 1990).

- Quality system: The resources available to the organization that comprise the processes jointly reliant and intended for healthcare services enhancements (Wagner, De Bakker, and Groenewegen, 1999).

- Learner’s readiness: It can be defined as the degree to which learners, in both management education and training, have prerequisite cognitive, emotive-attitudinal, and behavioral attributes, skills, and orientations that will prepare them for involvement in active, experiential learning contexts (Maddox, Forte & Boozer, 2000).

- E-learning:

E-learning may be named online or distributed learning, web-based training, and distal education (Holden & Westfall, 2006). It may be developed from other popular terms, such as e-commerce, and e-mail (Holden & Westfall, 2006; Moore & Anderson, 2004). It was defined as “the systematic use of networked multimedia computer technologies to empower learners, improve learning, connect learners to people and resources supportive of their needs, and to integrate learning with performance and individual with organizational goals” (Moore and Anderson, 2004: 350).

It was also defined by the American Society for Training and Development (ASTD) as "the delivery of content via the Internet, intranet-extranet, audio and videotape, satellite broadcast, interactive TV, and CD-ROM" (Holden and Westfall,

2006: 2). This study will use the ASTD's definition as operational definition because it is broader.

## **Chapter 3: MEDICAL EDUCATION SYSTEM IN EGYPT**

This chapter gives a descriptive analysis of the education system in Egypt. The aim of this chapter is to provide essential background knowledge to help to understand and interpret collected data for readers who are not familiar with the Egyptian education system. It is collected through desk research, observation, and interviews. Education habits and attitudes such as private tutoring, dependence on memorization and studying from notes are transferred from secondary schools to undergraduate medical education and then continue to post graduate education and CPD. There are many challenges for Egypt's education system in which will be discussed below. Many education issues for CPD have roots in undergraduate medical education and “Thanaweya amaa”. Understanding the education environment in Egypt is essential to understand medical education system and CPD.

### **A-Challenges for Egyptian education system**

Egyptian education system has many challenges, such as class overcrowding, red tape, weak infrastructure, and outdated curriculum. The education system has minimal impact on the economy (UNDP, 2010; El Sebai, 2006; Galal, 2002; El Baradei and El Baradei, 2004).

Low-quality education on primary, high and vocational education leads to provide an unqualified person to labor market, which leads to diminished return of investment on education. The drop-out rate is high among students, which leads to loss of money and effort. High repetition is another form of drop-out, as students repeat year several times before dropout. Most of the students cannot pass certain school years when school teachers do not have control on exam questions (El Baradei and El Baradei, 2004). Badly designed school performance indicators have a role in decline in school performance, as teachers make exam too easy to pass to maintain high-performance indicator. Most of the students have the same attitude in university, as they do not attend lectures and study only from final revision notes of private tutoring. As a result of Nasser education policy, there is a negative relation between quality of education and student number (Hargreaves, 2001).



## **B-Challenges for medical schools in Egypt**

Medical schools in Egypt have many challenges, such as overcrowded medical students during sections and seminars, which lead to low participation by students. Lack of infrastructure, such as chairs, air-conditioners and projectors, is also significant challenge. Insufficient financial resources form part of challenges, because medical schools spend large proportion on patient care in hospital (Loveluck, 2012). The main education method in medical school is lecture method. There are many barriers for the implementation of new education technology, such as poor infrastructure, high cost, and staff resistance to change (Aboshady et al., 2015; Gukas, 2007).

The student overcrowding affects the quality of medical education. In first three years, the academic lectures may have attendance of more than one thousand students. It may reach two thousand students in AlKasr Alainy Medical School during popular lecturer class. In last three years, the clinical class may have more than 70 students, who should do the clinical patient examination under professor supervision, which cannot take place in acceptable educational quality. This overcrowding affects student understanding and decreases concentration.

The quality of education has declined in last years because of limited participation of stakeholders (students, teachers, parents, and community) in the decision-making process. Ministry of Education (MoE) and MoHE have the control over entire educational process. The education budget has also decreased despite the increasing number of students (Reda, 2012).

## **C-Research outcomes**

The researcher's activities in Egypt have limited impact outside the academic field. Many dissertations and theses are only meant for getting academic degrees, but these are dissociated from market needs and organizations' expectations. The dissertations' recommendations are not implemented in practical fields. So, the impact on the economy is limited. On the other hand, big organizations do not sponsor research or open their doors for students to collect data, do an experiment in work environment, or use company's equipment. These private organizations need to earn more money

without supporting a real field research (El Hadidi and Kirby, 2016; El Hadidi and Kirby, 2015: 156).

### **D-Unemployment**

The unemployment rate is high among the fresh graduates because they lack information about the market field, personal skills, and market needs' experience. They represent about 90% of unemployment in Egypt (World Bank, 2007). It indicates that academic education and courses are almost obsolete and unrelated to market needs. Fresh graduates need to take professional courses and learn new skills to be qualified to the new jobs. This takes time, money and effort, which lead to postponing the marriage, increase in depression and violence. Families and government have realized that the return of investment in education is delayed (El Nashar, 2012). This context may not be suitable for fresh medical graduates as they are hired in MoH so the unemployment rate is low among them.

The minister of health Ahmed Emad Aldain said in a TV interview (I'm Egypt) TV program, "*Eight thousand out of nine thousand fresh-graduate physicians cannot practice medicine*". He has started to establish obligatory training program for physicians (Michael, 2016).

### **E-Education and economic growth**

University education is believed to increase economic growth and it should be top priority on reforms' agenda. However, the participation of Egypt University in the economic market is too little and a few universities have linked to industry field (El Hadidi and Kirby, 2016). Most of these links are based on the personal relationship between professors and business owners, because there is loss of trust or understanding between academic field and market field. However, the main healthcare impact on the economy is caused by money transfer for the Gulf region.

There are some recommendations for universities to improve impact on market and economy in Egypt; make persons connect universities in Egypt and industry field, register innovation and patents, increase awareness about role of university research in

economic development and profit maximization in industry field, support research centers and student associations to be more linked to market (Galal-Edeen, 2012).

According to human capital theory, physician is a factor of production. The physicians contribute to their knowledge and skills in the economy by preventing and management of diseases (Allen and De Weert, 2007). A physician has many years of education and training and there is a positive relation between years of educations and contributing in the economy (Hanushek and Woessmann, 2007).

### **F-Hospital levels of care**

Egyptian healthcare system has government and private providers. The government providers include MoH, health insurance, recovery establishment, MoHE university hospitals, and other governmental providing organization. The private healthcare sector includes hospitals, polyclinics (group of clinics from different clinical specialties such as pediatric, surgery, internal medicine, etc.), and clinic.

Healthcare service has three levels of service; primary, secondary, and tertiary. Primary healthcare units provide preventive health and family medicine. Units are distributed all over Egypt (urban and rural areas). According to the current regulation of MoH, fresh graduate physicians should work in these units from six months to two years. Then physicians move to secondary level to get residence and training on medical specialty. Physician in primary healthcare unit refers patients to secondary level to get a specialist opinion, then the patient should return to the physician in primary unit to complete the therapeutically plan with him.

Secondary level includes public and private hospitals, which have physicians from different specialties in additional to diagnostic methods, such as radiology (X-ray, CT, and MRI) and chemistry (liver and renal function, CBC, etc.). A patient may be admitted to inpatient ward to complete diagnostic or therapeutically plan. Some patients need an advanced level of care, so they are referred to tertiary level.

Tertiary level includes university and specialized hospitals. These hospitals have certain specialty, which may not be available in other healthcare organization,

such as neurosurgery and cardiothoracic surgery. Tertiary hospitals should accept to treat all complicated cases and rare diseases because they have qualified staff.

### **G-Requirements to enter medical school in Egypt**

A student with a high score in secondary school (Thanaweya Amma) can join medical school. There is no special test or interview; just score and ranking of wishes, then students enter the matching program. The English language is the teaching language, but no English test, such as TOEFL or IELTS, is required during undergraduate study. English language and medical terminologies are challenges for medical students during the first year, especially for Arabic secondary school graduate (Thanawia Amma). Lecturers use a mixture of languages (Arabic and English) (Sabbour, Dewedar, and Kandil, 2010).

Medical schools are under the regulation of the Ministry of Higher Education. Student to academic staff ratio is one academic staff for 9.5 students (Abdellah, Taher, and Hosny, 2008).

The major criticism to Egypt's secondary school system is that the students memorize and recall the information without analysis or interpretation. It is not an effective tool to assess the student's skills (Ghazal, 2012).

### **H-Undergraduate study**

The undergraduate medical degree has 6 years of education. First three years are academic (anatomy, physiology, biochemistry, histology, microbiology, pathology, pharmacology). During this period, there is no direct patient contact or hospital attendance. The last three years have clinical courses (surgery, internal medicine, pediatric, ophthalmology, ENT, gynecology, and obstetrics). After that, the medical student should complete one-year training as house officer to get final medical certification (Aboshady et al., 2015).

The undergraduate assessment methods have a direct impact on medical student's study method. Most of exam questions are essay questions, but in last few

years, multiple choice questions (MCQ) and case based questions were introduced in the Objective Structured Clinical Examination (OSCE) (Shams et al., 2013).

### **I-Career path**

After graduation, a physician can be registered in the general medical syndicate as a General Practitioner (GP). From this point, there are several pathways. The first pathway; a physician can be hired in some university to take academic qualification diploma, master, and Ph.D. The second pathway; a physician can be hired in other medical institutes, such as MoH. The third pathway; a physician can be a freelancer and join any institute by paying fees as a training residence physician in a university hospital or teaching hospital. Additionally, she or he can train in a private hospital and get a salary for his work.

A physician can be a resident, specialist, or consultant. It depends on qualifications and year of experience after getting the certification. The general medical syndicate has a system, which differs from MoH in the year of experience for promotion. Also, MoH requires physician service in a rural area for certain time before promotion.

## **Chapter 4: LITERATURE REVIEW**

### **A-Historical development of CPD**

The American Academy of General Practice started Continuing Medical Education (CME) in 1935. It became formal CME course in 1948 after changing the name to be American Academy of Family Physicians (AAFP). The CME became a separate topic in publication in 1960. The current international recognized credit hour system and CME are Physician Recognized Awards (PRA), which is created by American Medical Association (AMA) (Grant 2012; Costa et al, 2010).

Self-Directed Learning (SDL) is the start of CME. Physicians started to assess their needs for training, select appropriate methods, determine the goals and measure the impacts. So, all the activities are managed by the physicians. There is no standardized tool to assess SDL among physicians (Brockett, and Hiemstra, 1991; Knowles, 1975).

The SDL term was developed to be CME, which represents a formal method for a physician to acquire information, knowledge, or skills. With the passage of time, it became more organized and formal. Physicians can get certification and credit hours after participation in CME, which can help in growing in this medical specialty (Bennett et al., 2000).

CPD concept is the development of CME. The CPD includes all educational and training activities outside academic qualification. It requires ensuring that physician has ongoing activities to acquire, maintain and develop skills, attitude and practice in specific or general medical area (Academy of Royal Medical Colleges, 1999).

### **B-Difference between CME and CPD**

There are some core differences between CME and CPD. CME is an episode, interrupted, passive, teacher driven, one-way, formal method as lecture and formal

place. CPD is continuous, active, self-driven, formal and informal settings and methods. Comparison between CME and CPD is shown in table No. 1 (Linos, 2013; What is CPD., 2013; Chan, 2002).

**Table No. 1: CME vs CPS:**

<b>CME</b>	<b>CPD</b>
- Separate, no related activities.	- Continuous activities.
- Teacher driven.	- Student driven
- One-way direction (passive).	- Uses different methods and active participation.
- Formal education method. Official place as lecture room.	- Not limited to certain place, time, or method.
	- Covers many topics from different disciplines, such as clinical practice, management, information technology, statistic etc.

Source: Adopted from (Helena P. Filipe, et al., 2014)

### **C-Massive Open Online Courses (MOOC)**

Massive Open Online Courses (MOOC) became more popular in 2007. Many high-ranked universities, such as MIT and Harvard, started offering some courses for free. Certification may be obtainable for free for some courses or by paying small fees for other courses. It used social media for marketing and distribution of services (McAuley et al., 2010: 10).

The MOOCs websites have many international students in different areas, such as Coursera (<https://www.coursera.org>), which has more than 1.7 million students. Edx website (<https://www.edx.org>) has more than 370 thousand students (Pappano, 2012). Some high ranked US medical schools, such as Harvard Medical School, and Johns

Hopkins hospitals provide CME for some medical courses for free, especially in some topics like communicable diseases and epidemiology. The new trend after MOOC courses is the pathway or micro master. This means certain number of related consequence courses to acquire or develop skills in selected area.

A physician has multifarious motivation factors which help to distribute CPD, such as personal gain, performance improvement, patient safety, and improvement in knowledge and skills (Lewis et al, 2015; Henwood et al, 2004; Friedman et al., 2001; Murphy et al, 2006). At the same time, there are some challenges for CPD, such as overwhelming information and knowledge, which put immense pressure to catch up the updated publication (Gillam et al., 2009; Wentz, Jackson, Raichle, and Davis, 2003), ongoing lifelong education, learning, and training commitment (American Board of Internal Medicine, 2002). MOOC has high dropout rate just after beginning (Clow, 2013). Hand-on training required in surgical specialties or clinical practice needs more development.

#### **D-Physician motivation for CPD**

As CPD covers ongoing mandatory activities, there is dire need for a sponsor of these activities to be sustainable. However, the sponsorship increases conflict of interest and bias in the selection of information to be disseminated. As it is extremely different in evidence-based practice between EU and USA, a different group of medication may achieve same result. However, we build our knowledge on the basis of evidence-based medicine. There are still biases due to different age groups, cultures, and ethnicities. Consequently, many scientific societies started to put guidelines, policies and procedures for sponsorship, such as ophthalmology society's CME (Royal College of General Practitioners Accreditation, 2013; Continuing Medical Education Requirements, 2003). These guidelines enforced that practitioners should remain patient-centered, ensure lack of bias in practice while collaborating with the pharmaceutical company and avoid a situation with conflict of interest (Helena et al, 2014).

Accordingly, in order to develop e-effective CPD, we need to identify the need for training and then link this need with CPD. The learning activities can be conducted



in any format, as there is no best method or approach. Next, there is a need to transform this knowledge into clinical practice (Janet Grant,1999).

CME or CPD is one of the requirements for recertification, obtaining or renewal of license of practice in a number of countries. For example, in KSA, 40 credit hours are required for renewal of practice licensure of physicians working in KSA. So, it is important to ensure the quality of CPD through accreditation of these credit hours. The American Academy of Family Physicians (AAFP) developed the first accurate accreditation system for the continuous medical education program in the US 40 years ago, followed by American Medical Association (AMA) in 1967 (Honorio et al., 2012).

Accreditation should be transparent, demonstrable, and accountable (Grant, 2012; Zagorski et al, 2006; Davis et al, 2003). A set of standards has been developed for accreditation of organization, such as World Federation of Medical Education (World Federation for Medical Education, 2003).

Egypt has National Training Institute (NTI) under the supervision of the MoH. NTI mission is to provide training for healthcare providers either inside or outside the MoH. However, the training courses are very expensive for junior practitioners. Because of that, most courses are provided to foreign post-graduate healthcare students in Egypt.

## E-CPD theories

There are three theories for CPD program development models; update, competence, and performance models.

### 1-The Update Model

The update model depends on transfers and application of new knowledge in recent scientific researches and publications to the clinical setting. The update model aims at keeping healthcare employees' knowledge up-to-date. It is used in CME'CPD (Nowlen, 1988). There are differences between pedagogy, the art and science of teaching children, and andragogy, the art and science of helping adults learn. The pedagogy model is not suitable for andragogy model, because the adult learner is self-

directed. Pedagogy model does not meet adult learners' need and expectations. Adult learners are performance centered but not subject-centered as pedagogy (Knowles, 1980). CME/CPD uses pedagogy and andragogy during training course design.

There are some criticisms to update model approach. This model alone is not sufficient for physicians to keep them up-to-date with recent knowledge and information (Mott, 2000). This model improves CPD on individual bases, but not on the performance of group based CPD (Cervero, 2000). Courses based on update model have the various characteristics; easy to develop and deliver, easy to get commercial support, and trainers depend on undergraduate medical education model (Davis et al., 2007).

## 2-The Competence Model

The Competence Model can be defined as “Assessing, creating, maintaining, reviewing, enhancing, or assuring competence is frequently not only the goal that providers and consumers have in mind, but also a goal that immediately reveals the limitations of the updated paradigm” (Nowlen, 1988: 31). Harrison and Mitchell (2006) recommended using a job competence/functional analysis model as “competence is defined in terms of performance outcomes and not the qualities someone should possess” (p. 169). According to Heffron (2007), competency acquisition of physicians can be described from the trainee level to a practicing physician level as occurring over time or as an identifiable threshold where one either has “it or doesn't have it ... continued competence becomes an evolving life-long process towards expertise” (p. 215). In medical education, the aim of competence-based education is to make links between education and practice with education highly tailored to the requirements of practice or learner.

The outcome can be divided into five levels from least to most desirable outcomes. First two levels are candidate satisfaction and change in attitude, skills, or knowledge. They can be measured at the end of training activities. The third level, self-reported behavior change, can take some time to be evaluated. The last two levels are objectively measured change in practice and clinical healthcare outcome. These two levels are more difficult to be measured due to other contributing factors (Haven,

Bellman, Jayachandran, and Waters, 2005). Measuring the last two levels is expensive by traditional paper method, but it becomes more applicable after using Electronic Medical Record (EMR) (Currier, 2007).

These five levels are closely related to Kirkpatrick's model. The Kirkpatrick developed a model for measuring effectiveness of transferring knowledge (Kirkpatrick, 1994). This model is adopted in CME by Curran and Fleet (2005). It has four levels of measurement to assess the effectiveness of transferring CME to practical life situations. These four levels are trainee satisfaction, acquired knowledge, skills and information, clinical practice changes, and clinical outcomes.

The competence model has a criticism; there are some situations, where the competent physicians became incompetent. These situations may be due to personal issues, such as sickness, family problems, etc...or organizational issues, such as peer pressure, supervisor, work load, etc.... The healthcare facility should design a CME/CPD to improve personal as well as organizational performance (Nowlen, 1988).

### 3-The Performance Model

Assessment of performance in the areas of knowledge, understanding and insight, skills, attitudes, interests and values require different assessment procedures. Mott (2000) stated the "model asks, and therefore challenges continuing professional education to answer, what is the profession all about?" (p. 25). The certification and licensure should focus on monitoring and evaluation of base line skills, attitude, and knowledge of physicians' competence (Melnick, 2004).

## F-Adult Learning Theories and Practices

CPD is developed based on the Adult Learning Theories and Practices to develop appropriate program for physicians. There are many stakeholders, who are participating in development of CPD. Non-healthcare employees, such as IT, programmer, expert in adult education, and quality assurance, and CQI have role in developing CDP (Felch and Scanlon, 1997). CPD focuses on case based problem solving instead of passive education.

There are seven different approaches for Adult Learning Theories in CME/CPD, which are behaviorist, cognitivist, humanist, social learning, constructivist, sociocultural, and situational. There is a need for more research in CPD based on Adult Learning Theories (Mann, 2004). The adult learning theories include:

- 1- The behaviorist approach, which includes systematic design of instruction, behavioral objectives, competency-based education, skills training, and feedback.
- 2- The cognitive orientation in clinical cases. It depends on healthcare provider ability to analyze and solve medical issues in different patients and situations.
- 3- The humanist approach, which includes SDL, experiential and transformative learning, reflective practice and adult learning theory.
- 4- The social learning approach, which includes learning interaction with patient/patient's family, internal and external environment.
- 5- The Constructivism approach, which includes learning from personal experience in clinical practice situations through reflection process.
- 6- The sociocultural approach, which includes individual and community knowledge.
- 7- The situated approach in clinical practice, which includes an apprenticeship, wherein students move from the periphery of the community towards the center; a theory, which furthered the notion of communities of practice.

### **G-Human Resource Development model**

Human Resource Development (HRD) is often judged by its impact on performance of individuals, groups, and organizations (Bierema and Eraut, 2004, p. 60). In healthcare sector, information, knowledge and training have impact on community health status and management of patient's disease. The impact of training

can be defined as the transfer of information from class room to practice life situations (Figure 2) (Swinney, 1989).

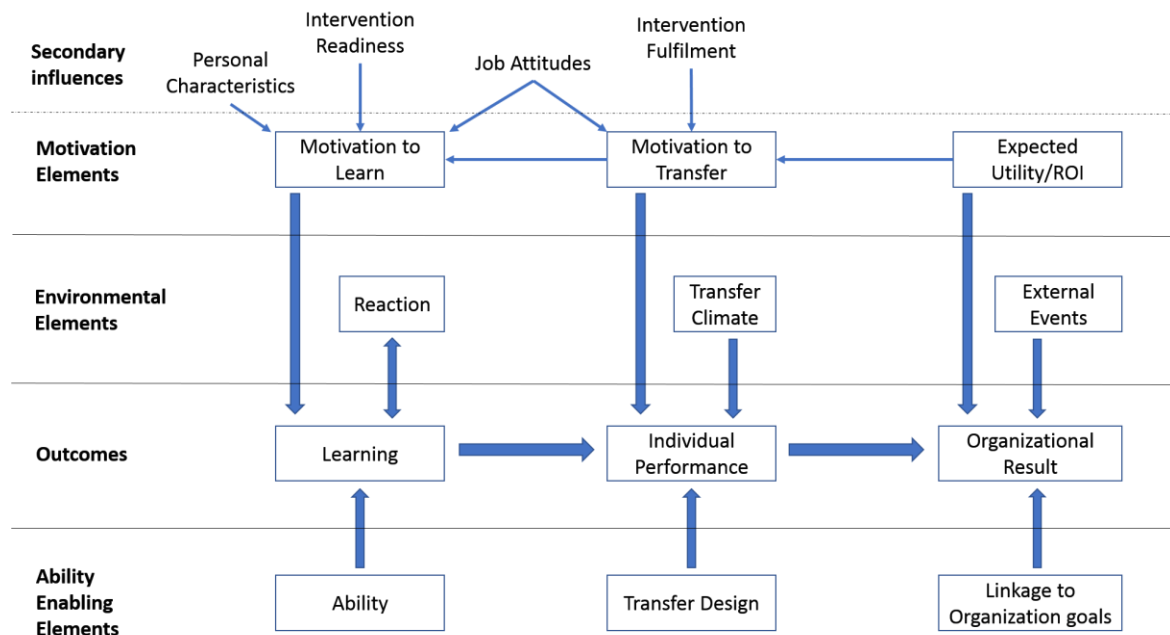


Figure 2: HRD evaluation research and measurement model.

Source: Holton, 1996: 17.

## H-Previous studies

A large number of peer reviewed journals of the last 5 years (from 2012 to 2017) were reviewed. The CPD/CME and healthcare were the keyword used. The articles were categorized according to the methodology, focus area, and geographic location. The articles related to physicians were also included, because this is the main focus area of this research. Data is summarized in table No. 2 in the appendix.

In USA, the impact of pain management certification on clinical practice for acute and chronic pain has a positive impact on the result. Data was collected through an online qualitative survey with national wide distribution. It assessed a specific point to compare certification with clinical practice knowledge and information (Bekanich, et al., 2014).

In East Asia, China and Indonesia succeeded in implementation of CME credit hours. They requested a certain number of credit hours to get registered, career

advancement and renew medical practice licensure. In India, there was a trail, but it partially succeeded as the central regulation agency underwent major changes. Data was collected from official websites of these three developing countries and published article with a focus on goals, requirements, motivation, and penalties on the physician and organization in order to assess the law and regulations for CME (Miller, et al., 2015).

International studies are using different methods as a systematic review and Delphi method to develop a new theory-based instrument for assessment of CPD for physicians' activities. The desktop research revealed 72 relevant instruments, but just 47 instruments were included. Twelve items survey questions were selected and tested out of 1218 items extracted from included instruments. The new instruments showed adequate validity and reliability to assess the impact of CPD activities (Légaré et al., 2014).

A multinational study in sub-Saharan area was conducted to assess the impact of family training program over 10 universities. Data were collected from 2008 to 2011 from the Primafamed project. The result showed that it is possible to develop and maintain a successful family medicine program, unfortunately it is a slow process (Flinkenflögel et al., 2014).

A report of challenges during implementation of 3 phases of Performance Improvement Continuing Medical Education (PI-CME) model was prepared. The three phases are learning from the current clinical performance, the first phase, learning from quality improvement intervention, the second phase, and learning from the result of quality improvement intervention, the third phase. The result showed that many USA organizations used 3 phases PI-CME and customized it according to customers and organization needs. They prefer using traditional CME and linking it with performance improvement and quality activities (Vakani, and O'Beirne, 2015).

A secondary study on multinational companies, which included randomized control studies only, was conducted to assess the problem-based learning. It showed that the problem-based learning is an effective education method, but its impact on physicians' performance need more research (Al-Azri, and Ratnapalan, 2014).

A local study in Haiti used trainers' consensus to analysis and evaluate competency based learning through online education lectures. All authors reviewed the course data. Then, the consensus on the course's goal was met, however the competence skills need to be improved. They used this data to design the new course (Battat et al., 2016).

A Delphi method was used to assess the area in need of more CME among different medical specialties in Iran. Data revealed that non-communicable diseases was the first area that needed more CME (Golanbar, and Malekiavarsin, 2014).

After reviewing these qualitative articles, it became apparent that there is lack of studies focusing on the Middle East region. Most of these articles used secondary data. The researchers did not use the interview method. Some studies concentrated on evaluating education method (Battat, et al., 2016; Al-Azri, and Ratnapalan, 2014; Vakani, and O'Beirne, 2015). There are few general overview articles with a focus on the legal aspect, motivation, and challenges in developing countries (Miller et al., 2015; Chakhava, and Kandelaki, 2013).

Some studies preferred a qualitative method in their study as following:

Breast feeding education website data was used pre-test and post-test to evaluate website contents and competence of participants. It gave a total score of pre-test, and then a detailed score of post-test. It is mainly a retrograde assessment of website data between 1999 and 2009. The result showed that the online education is useful. It should be free and cover broad general topics. An online course should be available according to candidates' time (Lewinet al., 2012).

A survey with the 5-point Likert scale was conducted over 6 months in Saudi Arabia to assess the perception of CME. It has 30 points with demographic data. It revealed that there is a difference in response among nationalities, specialties, and sponsors (Abkhazia, and Althubaiti, 2014).

A questionnaire was conducted pre-test and post-test for the training course for three groups for human rights in patient care in Serbia in order to assess the material, method, and importance of the topic. The result showed that the human right courses are important for physicians (Vranes et al., 2015).

A pre- and post-test was conducted to assess the impact of family medicine courses in KSA, which showed a positive impact on knowledge, skills, and attitude (Al-Baghli, et al., 2015). A retrograde assessment of 3 groups of family medicine has different CPD activities back group. It showed that CPD had a positive impact on clinical practice of family medicine. High quality and quantity CME has a positive correlation with the clinical practice of family medicine physicians (Goulet et al., 2013).

In Australia, a survey was conducted to assess geriatric physicians' satisfaction and presence for CPD. The result showed that on campus training courses are valuable for them, but they need more flexible training courses to increase physicians' participation and meet physicians' needs and expectations (Etherton-Ber, Katz, and Naganathan, 2016).

Some articles used the pre-test and post- test to evaluate the CPD (Lewin et al., 2012; Vranes et al., 2015; Al-Baghli et al., 2015). Others were interested to evaluate the method as teleconference (Battat et al., 2016). Some authors were interested to compare the CME-certified activity with the practice in pain management (Bekanich et al., 2014). Family physicians were the groups most included in this area of research (Golanbar, and Malekiavarsin, 2014; Al-Baghli et al., 2015; Goulet et al., 2013; Flinkenflögel et al., 2014). Saudi Arabia has many publications in this area (Abkhazia, and Althubaiti, 2014; Al-Baghli et al., 2015).

## **I-Research gap**

As discussed previously, published academic research about CPD in Egypt is limited. Assessment of CPD readiness and acceptance in Egypt is limited. Also, the evaluation of E-Learning system in healthcare in Egypt is limited. The interview method is limited in these studies. This study will focus on Egypt. It will focus to understand the CPD motivation, methods, challenges and preference among physicians. It will try to develop a readiness assessment tool for training organization.



## **Chapter 5: METHODOLOGY**

### **A-Study design**

Qualitative method was selected for this study. The data was collected through interviews using semi-structured open-end questions. The questions were built on the basis of the literature review data, observation, and pilot study.

### **B-Sampling Method**

The sampling method is non-random and purposive (Creswell, 1998; Merriam, 1998; Neuman, 2003). The purposive sampling could be used when the researcher wants to discover, understand, and gain insight into a phenomenon (Merriam, 1998).

The targets are representative of stakeholder groups, which affect and are affected by CPD. This includes, for example, officials from the general medical syndicate, Dean of the faculty of medicine in a public university, a representative from the MoH and physicians from university, public and private hospitals. In many cases, physicians are working in different hospitals at the same time, so the researcher did not ask about other work places.

There were ten interviews as follows:

- One with representative from general medical syndicate.
- One from MoH.
- One dean of faculty of medicine.
- Three academic staff in faculty of medicine.
- Three physicians and one medical director of NPO hospital.

Figure 3 illustrates how the sample covers the main four stakeholder groups (the academic staff, practitioners, general medical syndicate, and MoH).

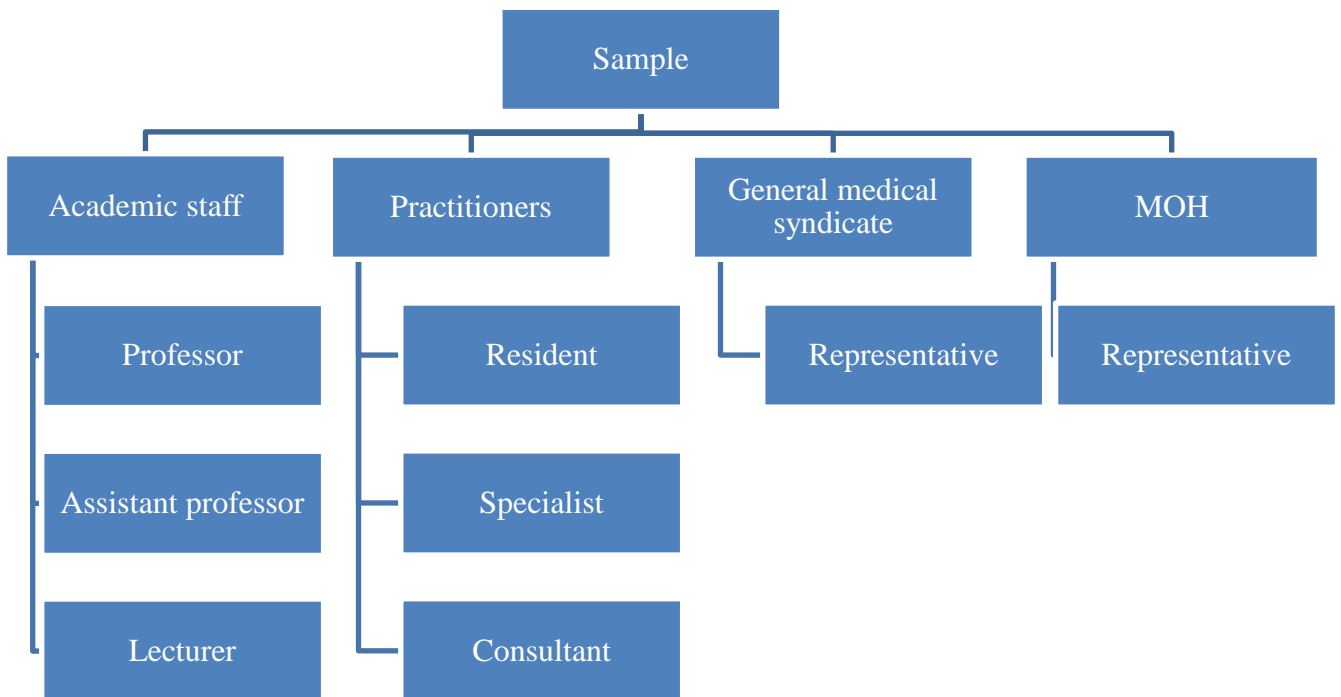


Figure 3: Classification of individual groups:

### **C-Sample Size**

The sample size is ten. Physicians were only included in this study as participants. Patients, nurses, workers and administrative staff were excluded from participation because they are out of the study scope.

All participants signed the approval consent to join the study and these consents will be kept and provided to the Institutional Review Board (IRB) at AUC when they needed. IRB approval was obtained before conducting the interview.

### **D-Interview questions' structure**

Interview questions contain 4 main groups. The first group contains questions about the demographics of participants, the second group contains questions about awareness of CPD and e-Learning, the third group contains questions about challenges being faced during implementation, whereas the fourth group covers recommendations and suggestions.

The researcher adopted a realistic style while describing the current situation, but he will be interpretative while analyzing the answers of the participants. The interview questions can be categorized into four groups: -

### Practitioners

- Are you interested in developing your professional knowledge? Why? How?
- Do you have internet skills? How often do you use medical websites?
- Did you participate in e-learning activity? What's your feedback?
- Did you buy any credit hours for CME? Why?
- Did you study international medical certification as MRCP, PLAP, USMLE? Why?

### General medical syndicate representative:

- How can we improve our physicians' skills in Egypt?
- Should CPD be voluntary or obligatory? Why?
- Should Egypt create a local credit hours system for CPD or use the international credit hours system? Why?
- In your opinion, what are the main three challenges being faced during the implementation of a CPD system in the healthcare system in Egypt?

### General medical syndicate representative

- Should the CPD activities be the responsibility of MoH, General medical syndicate or personal?
- How do you perceive the role of Universities, MoH, and general medical syndicate in CPD? Why?
- What recommendations or suggestions do you have for overcoming some of the main challenges being faced during implementation?

### Academic staff

- Do you prefer academic education or CPD? Why?
- What type of CPD are you involved in? Why?
- Do you want to add any comments or suggestions?

## **E-Study Phases**

### **1-Preparation and Administration Phase**

The researcher started seeking approvals from the university about the topic and methodology. The IRB was obtained before the implementation phase. Approval of the governmental authorities was obtained, which was essential to conduct the study. These authorities involved the health directorate and the hospital management board. It was not an easy task to get these approvals, as a lot of red tapers are involved.

### **2-Implementation Phase**

#### **- Selection of Sample**

Determining whom to include: After brainstorming discussion with my supervisor, it was decided that the sample population (Sampling Frame) should include physicians from different specificities level (e.g. residence, specialist, or consultant), academic staff from different level (professor, assistant professor, lecturer, or assistant lecturer), representative from general medical syndicate, and representative from MoH.

Determining the sample size: Sample size was determined according to data collection during interviews. The duration of the interview was approx. 10 to 15 minutes. The researcher got approval consent before starting the interview.

#### **- Data collection method**

The data was collected by face to face in-depth interview. The response of the participant was documented by word for word. The researcher recorded the interview after approval of the participant.

### 3-Data Analysis Phase

The participants' answer and comments were typed and entered into NVivo 10. This data was analyzed with regards to nodes, categories, and themes (Creswell,1998; Merriam, 1998).

## **F-Research Limitation**

### **1-Location limitation**

This study was conducted only in hospitals in greater Cairo. All governments did not make their representation in this study.

### **2-Participations limitation**

This study included physicians only who were accepted to participate in this study. Technicians, nurses, nurse assistants and administrators were excluded from this study. We could not conduct cross section study because of limited resources. Lack of participation may limit the result or participants may not be accepted to reflect the malpractice or may be subject to memory errors (Rea & Parker, 2005).

### **3-Tools limitation**

The author conducted this study through interviews using semi-structured open-end questions. Time available for these interviews was limited and may have affected the comprehensive elaboration of the participants' answers.

### **4-Sample selection limitation**

In addition to physicians working in private hospitals and/or public hospitals, the study included university and public hospitals.

Physicians were selected randomly from different departments during hospital visits. The hospital visit was conducted at different times to include healthcare providers from morning or night shifts.

### **5-Sample size**

Sample size is limited, but enough to bestow significant acceptable results.

### **6-Time limitation**

The study was conducted in three months only (May, June and July 2017).

## Chapter 6: FINDINGS AND ANALYSIS

### A-Physicians interest in CPD:

All physicians involved in this study showed interest in developing their knowledge and skills. Physicians have the motivation for CPD but on an individual base. They should be involved in formal education, such as academic degrees, or professional qualifications, to be able to find work in private sector in Egypt or travel to work in gulf region or west countries. A residency physician said, *“Physician should update his knowledge”*. This concept is clear and obvious to all individuals involved in this study.

As stated by the representative of the medical syndicate, if a physician leaves practical medicine, she or he will not be keen to update her or his knowledge and can give you a reason of that, such as *“I did not read a medical book since I am involved in this public administration work”*. The medical director said, *“I did not practice medicine since I got this position as medical director for more than five years”*. Internal medicine specialist said, *“I need to review several guidelines every day”*.

The sample included in this study represented wide variables in age, education level, and place of work. But, we can categorize them into three main categories. In the first category, physicians want to know the most recent knowledge and update in their specialties. This category included academic staff or young physicians studying to get an academic or professional degree. In the second category, physicians want to know the management of the most common diagnosis and they are not interested in rare diseases or most recent medication. This category includes general practitioners, family physicians, and most MoH's physicians. In the third category, physicians want to remember some information to be able to deal with patients. They include old physicians and non-practical physicians, who get administration work or paradigm shift to another sector so they are not keen to update their knowledge.

Frequency of knowledge update is also different from general medical topics to core specialty. Professor of internal medicine and nephrology said, *“I know some information about every topic in internal medicine, but I knew everything about nephrology”*. Another professor of internal medicine and endocrinology said, *“I*

*manage only endocrine patients and I referred others to specialized professors*". This shows a difference in the scope of CPD according to physicians' interest.

## **B-Preferred source of information**

### **Online**

There are many methods to get new information and update knowledge and skills, such as conferences, meeting, seminars, lectures, books, Internet, and training courses. The most frequently used methods are reading hard copy text books and internet search. When individuals were asked about the most frequently used source of information, they named some text books and website as "Medscape". Some physicians prefer Google search to find information related to a specific case with multiple comorbidities.

Young generation prefers internet based knowledge from trusted websites, such as "PubMed" and "Medscape". They used to search for investigation, drug dose, interactions, or side effects. *"I used internet for drug-drug interaction and to calculate the dose"*. But, they have a common issue which is weak internet coverage (3G mobile internet) inside the hospital. Physician said, *"I prefer the internet because it is fast and I can get most recent data"*.

### **Staff round**

Staff round is a regular visit to patients in hospital by medical staff for the purpose of making decisions regarding patient care. Staff round or department meeting is strong only in university hospital, but the academic staff does not consider these meetings as a source of information for them, because they need more detailed information about the disease. However, the staff rounds or department meetings are considered as effective method for peer pressure and motivation for them to update their knowledge. Professors consider these as an effective tool to highlight clinical experience and differential diagnosis, especially for resident physicians, house officers, or medical students. *"We obligate the students and officers to attend the staff meeting and we cancel all activities during this meeting"*, said a professor of internal medicine. Complicated cases and rare conditions are discussed in staff meeting.



Some professors may refer an interesting case from their private clinic to be discussed in staff meeting. Also, other department may ask consultation from specific department for a difficult case.

Staff round manages the internal patients, which are the most common cases. They may be in early or late disease stage. Staff round should stress on hand on training and clinical experience as opposed to staff meeting which stresses on theoretical bases. A professor said, *“During staff round, a residency should show me how he asks and exams the patient to get appropriate information”*.

## **Conference**

Medical conference is an interesting tool for learning for highly experienced consultants, because they present interesting cases and researches at national or international level. Physicians from same specialty meet each other and discuss personal experience with new technology, medication, and work place. Pharmaceutical and medical devices companies may sponsor and organize these conferences to market their products. This tool may not be suitable for fresh graduate physicians. But, they are keen to attend. A specialist said, *“I used to attend medical conferences to collect certifications and put them in my CV, but later when I got my master degree, I removed these attendance certifications”*.

## **Book**

In general, there are two types of books; hardcopy and softcopy books. The hardcopy book is the most familiar method for all physicians during long study path of undergraduate and post-graduate degree. In Egypt, most of hardcopy books include department book of medical school, private tutoring book, or unauthorized copy from international text book. These unauthorized copies are available in private library inside the medical school. The original copy is expensive.

The physicians are used to highlight in hardcopy book and take side notes. They prefer to study and review from the undergraduate books during the postgraduate study, because they are familiar with the book style and notes. In every specialty, there is the main source of reading and reference, such as Goldman's Cecil Medicine in internal

medicine, Bailey & Love's Short Practice of Surgery, and Williams Textbook of Endocrinology.

The hardcopy book method does not depend on the knowledge, but depends on physician age and workplace. The older generation prefers hard copy books, because they are used to read it. They review the whole topic from this book and may not have computer skills. Professor said, *“I cannot read from my mobile, because font is too small”*. They prefer to read while in private clinic or at home. *“I put the books on the desk and spend all the night reading after clinic”*.

Residence and specialist physicians who spend most of the time in hospital prefer softcopy book on mobile or tablet, because it is easy to access and they can read when they have time available. They use offline softcopy due to limited mobile internet coverage in some hospital's locations.

### **E-Learning**

The concept of E-Learning or distance education is not familiar to all individuals included in this study. They needed explanations and examples about the most popular medical sites, which provide these types of courses, such as Coursera and BMJ. Some physician asked some questions about these courses, and then said, *“I do not have time and commitment to complete these types of courses”*. All physicians included in this study are not interested in being involved in e-Learning activities. They have not done it before in medical area. They prefer to get the information directly from a search about specific information on medical websites or books. The distance learning activities provide certification after course exam with certain score and limited attempts. Physicians are not interested in getting certification from these websites and the course fees are the barrier for them, because they are not interested in it.

A physician, who returned recently from KSA, said, *“My private hospital in KSA provides online access to medical website to get credit hour for license renewal. I did not pay money for this service”*.

## **Training courses**

Training courses may be obligatory during academic study. These courses are not medical courses, but they may be courses in statistic, or Microsoft office. Other courses are required to be promoted in your carrier either inside the medical school, or MoH. Medical schools accept training courses, which are provided by university itself. MoH requires from physician who completed an academic or a professional degree to get five courses to be promoted. However, MoH does not have the capacity to provide this enormous number of courses through National Institute for Training of MoH, so MoH accepts training courses certification from any scientific society. It did not put specifications for these training courses, such as duration, or accreditation. The representative of general medical syndicate said, *“It opens the doors for selling certifications”*. This is an example of unrealistic bureaucratic decision, which should be corrected.

## **C-The credit hour system in Egypt**

Physicians are not interested to collect credit hours, as they are useless for them in Egypt. In Egypt, there is no system for medical practice license renewal. The academic degree requires certain activities and log book, which depend mainly on activities inside the university. Some medical schools started implementing credit hours system for academic courses, but not for professional courses or activities. Physicians who work in gulf region should collect a certain number of accredited credit hours for the renewal of license to practice. They can get these credit hours from different methods, such as conferences, courses, and e-learning activities. One of the physicians included in this study worked in KSA and got the required credit hours through hospital access to local and international resources. He has not paid money for these credit hours and is not aware of the cost of these credit hours. He said, *“Public and private hospitals provide access to credit hours for free”*. He returned to Egypt several years ago and did not try to get these credit hours again. He said, *“Why should I get credit hours in Egypt! If I need information, I will search about it”*.

The Egyptian credit hour system is a new idea for physicians in Egypt, because they had never thought of it before, because there was no need for that. Some physicians said, *“We can create it, because we have qualified people”*. Others said, *“The*

*international credit hour system will be better*". The general medical syndicate representative said, *"There is medical education specialty. People who are specialized in this area should be included to decide the best system for Egyptian physicians"*. The representative of MoH said, *"We will have the obligatory physician training committee, which will establish the regulation of credit hours' system or put the requirements for physicians' training"*.

#### **D-International medical certifications**

Physicians recognized the international certifications, such as MRCP, MRCS, USMLE, and PLAP. Physicians of MoH said, *"International certifications could be the alternative for a Ph.D. degree, as it is too hard for them to get it while working outside the university"*. The representative of general medical syndicate said, *"It is a personal decision"*. If the physician decides to immigrate or work abroad, she or he should get one of these certifications. The representative of MoH said, *"Egypt has Egyptian fellowship, which is equivalent to Ph.D. and is recognized in Gulf region"*. Egyptian fellowship is five years training certification without thesis, which was created and regulated by MoH. The training may be inside certain MoH, or university hospitals. In Egypt, we have 3 main educational pathways; Academic degrees as diploma, MSc. and Ph.D., Egyptian Fellowship as practical qualification and foreign certification as MRCP, or MRCS.

#### **E-Physicians' training needs**

The physicians said that they need more practical training than theoretical lectures. There is a huge gap between training in university, or education hospitals, and MoH hospitals. Physicians need more contact with consultants and professors to develop their skills. Lack of overlap, hand on or direct contact between consultants, specialists and residences in MoH hospitals lead to the lack of training of the staff.

#### **F-Trainers**

Lack of qualified trainers may be the root cause of the low-quality of healthcare services in MoH's hospitals, especially in rural areas. In most of the cases, physicians work there as GP just after graduation without supervision from a specialist. Lack of medical investigations or inaccurate results make the diagnosis more difficult for them.

GP in rural area should refer difficult cases to a specialist, or public hospital. The referral system to a specialist should increase knowledge of GP when patient return to the family physician or GP with the specialist management plan to follow up, but this does not happen because of no direct contact between levels of care.

The academic staff has several factors supporting CPD activity, such as contact with professors, high flow rate of patients, referral of difficult cases, and peer pressure.

## G-Suggested solutions

Two different opinions to develop professional knowledge of physicians in Egypt were voiced by the interviewers. First is General medical syndicate representative's opinion and the second is the MoH representative's opinion. The scientific societies in Egypt do not have a role in developing the CPD system. Its role is for scientific activities only in the form of meetings, conferences, and courses.

### 1-MoH suggestion

MoH works to make CPD obligatory for all physicians and to create exams for them. The license to practice may be linked to CPD courses or credit hours system. MoH requests a certain number of training courses required after completing an academic degree to be promoted in MoH as specialist or consultant. General medical syndicate criticized the MoH decision to obligate physicians to get courses in the general and specific topics after getting their academic or professional degrees to be register in specialist or consultant list. The general medical syndicate representative said, "Why did the MoH obligate the physicians to be involved in CPD activities just after getting a degree?" A physician has passed several types of assessments before getting the degree, such as oral, clinical, essay, and MCQs exams. It will consume more time and money from limited physicians' resources.

### 2-General medical syndicate Suggestion

General medical syndicate has the vision to establish CPD system in Egypt. The infrastructure of CPD is weak, as there are limited places for hand on training and their services are expensive. Before making the CPD activities to be obligatory for physicians, it should be available and accessible for them. It suggests starting with

essential training for all specialties, making it available and then moving to specialties and subspecialties. Also, we could start with the general topic of most common diagnosis, such as diabetes mellitus, hypertension, or liver cirrhosis, which may be more interesting for a large sector of physicians and then we could provide more specific topic in subspecialties.

CPD activities should be implemented gradually. General medical syndicate representative said, “*CPD should be available for all physicians in a voluntary way*”. This step will assess the infrastructure readiness and will give us enough data to build a database for training organization. MoH should create motivation to encourage them to participate in CPD activities before making it obligatory. MoH’s decision has created a huge demand for training courses, which are provided by MoH through NTI. It does not have the capacity to meet the huge rise in demand after MoH’s decision and has a very long waiting list. Because of that, “*the MoH started accepting course certification from any scientific society, which opens the doors for corruption and selling the certification*” as said by representative of general medical syndicate.

## **H-Obligatory training authority for physicians**

The obligatory training authority for physicians was established by the prime minister’s decision No. 210 in 2017. This new authority has 18 board members; 5 deans of medical schools, a representative from the Supreme Council of Universities, representatives from military and police hospitals, a representative from military medical services, 3 representatives from MoH, and representative from a general medical syndicate. The aims of the authority are:

- To develop the level of clinical medical training for graduates of medical schools and their examination to ensure that they are adequately qualified for safe medical practice.
- To supervise the national examinations contract to measure the completion of specialized training. Those who pass the exam will receive a specialized certificate called "The Egyptian Board".

- To develop standards for the contents of specialized medical training at various levels and take into account the standards of the level of training in the hospitals of the armed forces.
- To develop medical specifications to be available in medical institutions and to monitor the level of training in them, provided that the Armed Forces Services Department is responsible for the systematic monitoring of the level of training in the hospitals of the armed forces.

The armed forces have a dominating role in this new authority, which created a criticism from many stakeholders as the armed forces medical school is established recently and the armed forces hospitals has limited capacity. This new authority does not have any decision yet, so the general direction is not yet known.

### I-CPD challenges

According to the interviews, the three main barriers for CPD are time, cost, and infrastructure.

#### 1-Time

Many physicians work in several institutes in day and night shifts, which makes the time available for training centers very limited. The workplace does not allow physicians to get days off for training activities. It just allows for exam days, which makes most of the physicians depend on self-development and reading as CPD. The duration of any training course is about 3-5 days. A training course schedule may be an issue, because it may be every day for a week, which affects physician work schedule, or every week end for more than a month, which affects physicians' family lives.

Physician's time is divided between the public hospital, private hospital and private clinic if available. During early career life, a physician spends more time in the public hospital with shifts around 24 hours with low wages. If he has the available time, he works as part time job in polyclinic or private hospital. He works per shift from 12–24 hours. He may work for one or two shifts per week. In most of the cases, private work may be far away from governmental work. So, he needs to spend more time and effort in transportation.

## 2-Cost

Training is so expensive, especially if it includes hands on training or simulators. So, the physician should select training courses carefully. She or he spends a lot of time searching for training course prices and training places for comparison. MoH sponsors very limited training places for their physicians. The selection criteria for participating physicians depend mainly on social connections, and favoritism.

A physician from MoH said, *“Here in Egypt, we are abused”*. He gave me an example of an international well recognized healthcare organization, the American Heart Association (AHA). This organization provides the books, material, and certification for free for its courses. AHA’s courses, such as Basic Life Support (BLS) and Advanced Life Support (ALS), are essential courses for every physician and the certification should be renewed every 2 years. In KSA, these courses are provided in the hospital for free, but here in Egypt, the price ranges from 1500 EGP to 3500 EGP for each course.

## 3-Infrastructure

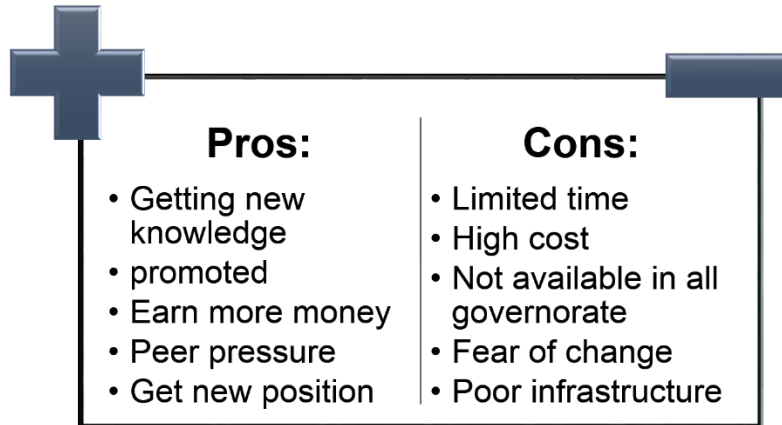
Training infrastructure is limited in MoH hospitals. Physicians get their training in university or educational hospitals. Essential equipment for diagnosis may not be available, or may not work in many cases, so the reach to definitive diagnosis is changeable. Many lab investigations in public and university hospitals are sent to private labs. The surgical instruments or imaging machines may also not be available, which limits the type and number of procedures done in public hospitals, which results into negative impact on staff experience. Training rooms, chairs, projectors, computers and white boards are limited in many healthcare organizations.

Training infrastructure may be available in certain hospitals or training institutes, but it is available for high-cost training courses due to high rent cost, which may not be suitable for the majority of MoH’s physicians.

Force field analysis for CPD is developed on previously collected data. It shows the driving and resistance forces affecting the physicians. These factors may be increase or decrease in certain time of physician’s career life. Physicians are motivated to get



latest information, promoted in their career path. Limited time, high training cost are the main challenges (see Figure 4).



*Figure 4: Force field analysis for CPD in Egypt.*

## **Chapter 7: RECOMMENDATIONS AND CONCLUSION**

We need to assess the infrastructure training facilities in Egypt to comprehend the current situation. The policymakers can make the decision based on reliable data. The infrastructure should include the equipped training place, qualified trainers, and time available for the candidates.

MoH should have training need assessment for general physicians and different specialties. It should start with most common diagnosis, and prevalent diseases. Afterwards, it should create specialized courses for different medical specialties. So, we should have two main categories; general training and specialty training. Every category may have various levels according to time, difficulty, and subspecialty.

Egypt should be divided into geographic sectors according to endemic diseases. Every sector should have a local committee to supervise and organize training activities either in hospitals or training centers. These local committees should be the link between physicians and top management levels, such as MoH, obligatory training authority for physicians, general medical syndicate, and other stakeholders.

The training should be available when physicians need it or hospitals request it for the staff. It should be affordable for physicians according to their salary scale. MoH should sponsor these training activities to ensure the acceptable quality of healthcare services. The current MoH training activities are not sufficient to meet the physicians' needs and expectations.

MoH should focus on the practical training and it should become routine activities during staff rounds, department meetings and seminars. MoH should invite academic staff for working in public hospitals for capacity building of MoH staff.

The MoH should have enough training budget for capacity building. MoH's physicians should get certain number of credit hours or training courses per year. These training courses should be selected on an individual base according to physicians' need.

The medical training courses should be divided into levels with clear goals. Each level should include certain number of training courses. After completing the training level, the physician should complete certain time of clinical practice to master the new clinical skills and information.

Private public partnership can help in providing training infrastructure through private sectors in training process. This will increase the number of training places with medical equipment. Action plan and Gantt chart were developed to support the implementation of these recommendations (see table No. 3) and (Figure 5 and 6).

Some recommendations for MoH and the authority of obligatory physician training are the scope of service, strategic goals, organization structure, training and certification, criteria for physician evaluation, methods of evaluation, and material used for exam preparation.

### **A-Scope of service**

The authority of obligatory physician training should have a well-defined scope of services. It should not provide the entire process of training, evaluation, and certification, because it will create a conflict of interest. MoH, general medical syndicate, healthcare organization and physician should have a clear, well defined, and published role. The scope of services is a very critical step at the current stage, because it helps in defining the roles, responsibilities, and authority of every stakeholder.

### **B-Strategic goals**

The stakeholders have different goals, scope, timeframe, and method. It was obvious to the public during the opening of renewing the building of national training center of MoH in Abassia, which became the authority of obligatory training for physicians. The president discussed about the Egyptian board, the minister of health talked about the license to practice for fresh graduate physicians, the public audience expected quality improvement of training and provided services. Because of that, the strategic plan should be created with stakeholders' participation and public discussion, because it will take time and effort to be developed and implemented.

The external environment analysis of Gulf region, EU, and USA system is a critical success factor, because Egyptian physicians need international recognition. The certification body should be established after we have a complete strategic plan with a clear scope of services and accepted role of stakeholders. Now, we have a selected board for the obligatory training institute for physicians, which will play this role.

### **C-Organization structure**

MoH could be the main barrier or resistance for a real change in training system, because MoH has all elements of training, such as hospitals, trainers, training places, and carrier path. MoH has training sector, which has failed to meet MoH physicians' needs and expectations. MoH should not be the main player in this new training system. This study recommends making the new authority under umbrella of the prime minister or the president to have the authority over the MoH.

The board of directors of the new authority entails deans of medical schools. Board of directors should include a physician with Ph.D. with 15 years of experience as the establishing order, but they should not be dean of a medical school. Deans of medical schools should focus on implementing the Egyptian and international accreditation standards for medical school. They should focus on getting the accreditation for their medical schools. The new authority, board of directors, should have physicians with more direct contact with young physicians and patients, because they understand the current situation better.

The legal structure of the new authority should be a Non-Governmental (not for profit) organization to ensure impartiality. It should have independent enough financial resources.

### **D-Training and certification**

The training and certification processes should be separate processes without any interference in staff, material, place, or board of directors. The authority of certification should be different from the authority of training to prevent conflict of interest. In an ideal situation, the authority of certification should develop regulations and standards for training organization, but it should not provide training courses.

## **E-Criteria for physician evaluation**

The new authority should have clear measurable, reliable, and valid standards and tools to evaluate physicians. The evaluation's results should be same when candidates repeat the exam several times, in different test centers by different assessors. The evaluation should be distinguished from academic evaluation. It should have different methods for evaluation. Otherwise, it will be loss of time and money.

If Egypt is looking for international recognition from other countries, the authority should have foreign representatives from developed countries, such as USA, England or Australia. This can add a value to this new authority.

## **F-Method of evaluation**

Oral, written and clinical exams are the current methods of evaluation. These methods need huge resources and time allocation form examiners and physicians. The current system is affected by favoritism. It will be better to use the computer based assessment, because it will save time and cost. It will be easy to establish computer based test center in different governorates or contract with established exam providing center for TOFEL, GRE, etc. USA uses the computer based test in United State Medical License Exam (USMLE). Saudi Arabia uses the computer based exam to get a license to practice with score target for every specialty (such as internal medicine, general surgery, ENT, or pediatric) and level (consultant, specialist, or residency).

## **G-Material used for exam preparation**

The exam preparation material should be different from the academic school preparation material to add value. The exam preparation material should be more practical and related to common diagnosis and emergency situations. It should not focus on rare diseases or expensive and unavailable investigation.

The authority should not offer preparation courses for the exam, sell preparation material, or recommend any training center for exam preparation.

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## **APPENDICES**

### **A-Finding summary of literature review**

Table No. 2: Finding summary of literature review:

<b>Reference</b>	<b>Method</b>	<b>Geographic</b>	<b>Focus area</b>	<b>Group of people</b>	<b>Approach</b>	<b>Finding</b>
(Bekanich, S. J., et al., 2014)	Qualitative; online survey	USA	Pain Management	Physicians	Certificate vs practice in pain management	CME can improve healthcare services for patient with acute or chronic pain
(Lewin et al., 2012)	Quantitative	USA	Breast feeding	Health care professionals & undergraduate candidates	Comparing pretest & post test results	The free activities are good and cover wide scope
(Miller et al., 2015)	Desk research for websites and documentation	China, India and Indonesia	Legal aspect	Physicians	Disk research, secondary data	Indonesia and china CPD is necessary for re-licensure and career development respectively

						and re-registration. in India, there are unsuccessful trials
(Abkhazia, and Althubaiti, 2014)	Quantitative	KSA		participants	Survey, 5-point Likert scale	CME feedback can be different according several factors such as medical specialties and nationalities
(Golanbar, and Malekiavarsin, 2014)	Descriptive qualitative	Iran	Identify the educational needs of	General Physicians	Rank the area of knowledge need more work	Non-communicable diseases are the highest priority for physician education needs assessment.
(Légaré et al., 2014)	Qualitative; multipronged study had four phases	International	Health professionals' clinical behavioral intentions	physicians	multipronged	theory-based tool is a good measurable element for CPD.
(Vranes, A. J., et al., 2015)	Descriptive; Quantitative	Serbia	healthcare and human rights	medical doctors, dentists, nurses,	pre-test and post-test scores	heighten awareness of the state of current healthcare and

				pharmacists, clinical officers, as well as fifth year medical students		human rights issues to increase the involvement of healthcare professionals both locally and globally.
(Al-Baghli, N. A., et al., 2015)	descriptive quantitative	Saudi Arabia	Family Medicine	Physician	pre-test and post- test scores	
(Goulet, F., et al., 2013)	Quantitative	Quebec	Clinical performance	Family practitioners	To evaluate the link between the quantity and quality of (CPD) activities completed by family physicians in Quebec and the quality of their practice	CPD activities of sufficient quality and quantity are correlated with a high quality of professional practice by family physicians.

(Flinkenflögel, M., et al., 2014)	Qualitative; SWOT analysis	sub-Saharan Africa	development of family medicine in sub-Saharan Africa	Family medicine	analysis of the Primafamed project between 2008 and 2011	Development of sustainable family medicine training programs is a feasible but slow process
(Christ, H., et al., 2015)	Qualitative and quantitative; Literature review	Germany	Assess the need of transfer knowledge between several specialties	Physicians	Literature review	The individual need for healthcare information from unpaid CME article is high.
(Chakhava, and Kandelaki, 2013).	Qualitative	Georgia	legal aspects	Physicians	Review article	A self-governing multidisciplinary board or professional association should be the main provider and supporter of CME/CPD in Georgia.
(Vakani, F. S., & O'Beirne, R., 2015)	Qualitative	USA	three-staged (PI-CME) model.	physicians	3 stage models	The usage of three-staged (PI-CME) model in USA is limited.

(Al-Azri, and Ratnapalan, 2014)	Qualitative; literature review	international	To investigate the effects of PBL in CME	physicians	Literature review	online PBL is a useful method of delivering continuing medical education. There is limited evidence that PBL in continuing education would enhance physicians' performance or improve health outcomes
(Etherton-Beer, Katz, and Naganathan, 2016)	Quantitative	Australian and New Zealand.	To understand the need and expectation of geriatricians for CPD.	Physicians geriatricians.	An electronic survey.	face-to-face CPD is good but it needs to be more customized according to individual base.
(Battat, R., et al., 2016)	Qualitative online survey	Haiti	Distance learning	Physicians	Live activates from distance institutions were teleconferenced to physicians in	It helped to fill the gap of education in rural Haitian physicians.



					remote Haitian sites	
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## B-ACTION PLAN

Table No.3: Suggested action plan:

No	Task	Responsible	Duration	Start date	End date	Predecessor
1	Establish independent organization under the president or prime minister.	President	2 weeks	10/01/17	10/18/17	
2	Determine scope of work, organization structure.	Prime minister	1 month	10/19/17	11/29/17	1
3	Ensure there is no conflict of interest with other ministries and organizations.	Prime minister	1 month	11/30/17	01/10/18	2
4	Ensure impartiality, not provide training courses, preparation of training material, consultation or preparation for training organization (Supervising organization should not provide same services of training organization to avoid conflicting of interest)	Prime minister	1 month	11/30/17	01/10/18	2

5	Allocate enough financial resources separated from activities.	Prime minister	2 weeks	01/11/18	01/30/18	3, 4
6	Create job description and specification for board members	independent committee	2 weeks	11/30/17	12/19/17	2
7	Appoint board of directors.	President	1 week	01/11/18	01/19/18	6, 3, 2
8	Ensure board of directors do not have any conflict of interest.	Prime minister	2 weeks	01/22/18	02/08/18	7
9	Invite international members from developed countries and region to attend meeting and supervise activities	Board of directors	1 month	02/09/18	03/22/18	8
10	Create partnership and memorandum of understanding with governmental and NPO in medical education field	Board of directors	1 month	03/23/18	05/03/18	9
11	Establish a department for training organization	Board of directors	1 week	02/09/18	02/28/18	7, 8

12	Import, modify and create standards for accreditation of training organization	training organization department	2 weeks	03/01/18	03/20/18	11
13	Develop policies and procedures to register, approve, supervise, accredit and reaccreditation for training organization.	training organization department	2 weeks	03/21/18	04/09/18	12
14	Develop policies and procedures to register, approve, supervise, accredit and reaccredit for certified trainers.	training organization department	2 weeks	04/10/18	04/27/18	13
15	Establish a department for content management (training material).	Board of directors	1 week	02/09/18	02/19/18	7, 8
16	Import, modify and create standards for accreditation of training material.	content management department	2 weeks	02/20/18	03/09/18	15
17	Establish a department for quality management.	Board of directors	1 week	02/09/18	02/28/18	7, 8

18	Establish a document control system for administration work and certification for verification.	Quality management department	1 month	03/01/18	04/11/18	17
19	Establish a website to be the main method of communication with training organizations, trainers, candidate and other organization.	Board of directors	1 month	04/10/18	05/21/18	11, 12, 13, 15, 17
20	Establish a priority list for training courses according to training need assessment of MoH and physician survey this list should be priority of all stakeholders.	Board of directors	2 months	03/01/18	05/23/18	11
21	Establish regional offices to supervise and facilitate accreditation process.	Board of directors	2 months	05/22/18	08/13/18	19

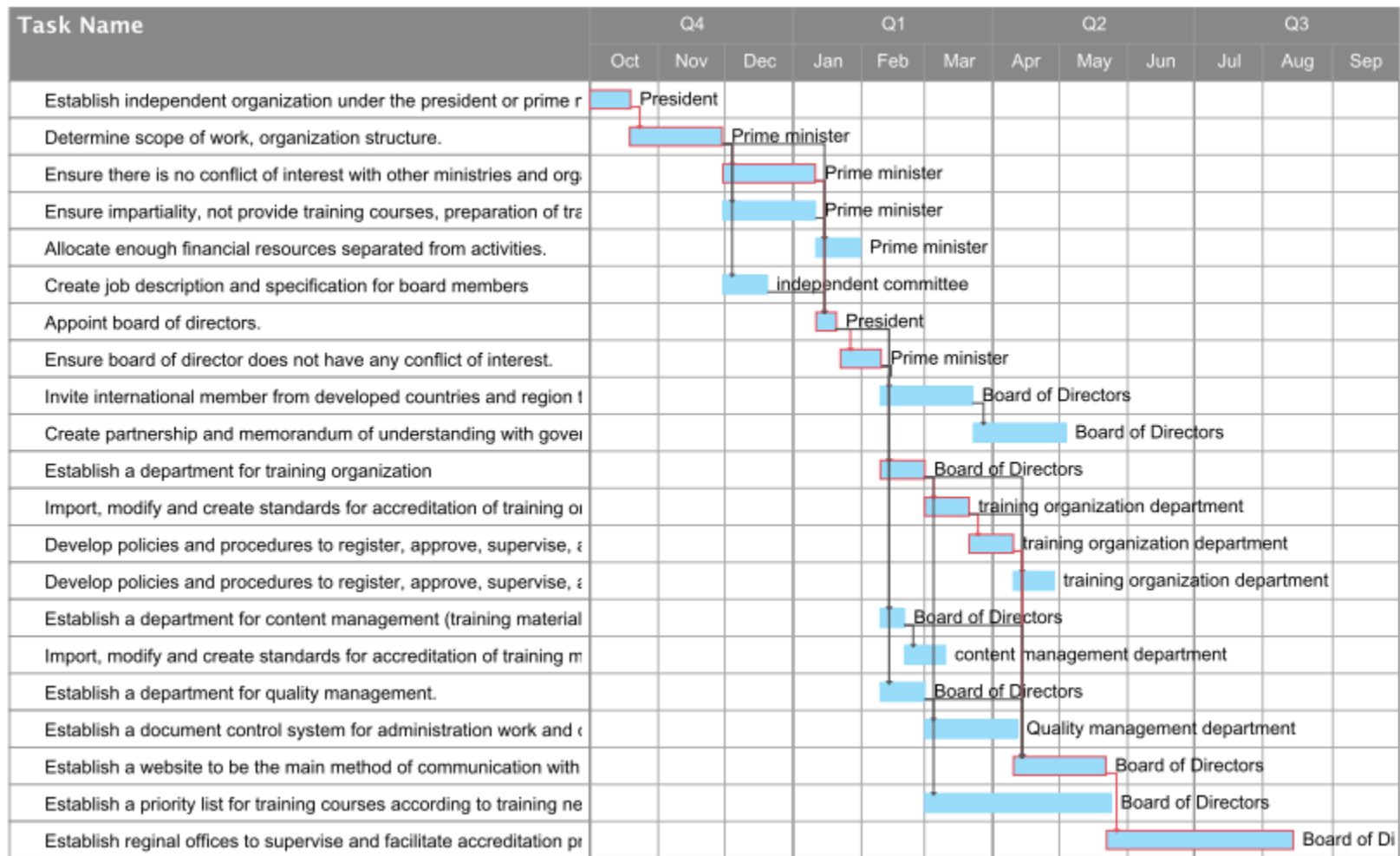
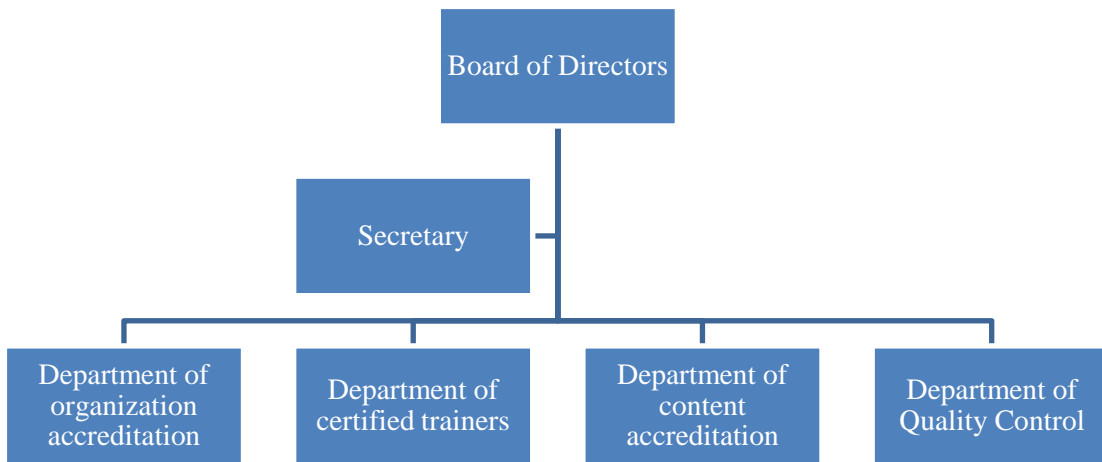


Figure 5: Gantt chart for suggested action plan.



*Figure 6: Suggested organization Structure for the new authority*

## C-READINESS ASSESSMENT MATRIX

No.	Prerequisites	Degree of availabilities				Comments
		Not met	Partially met	Met	N/A	
1	Infrastructure					
1.1	Training rooms					
1.2	Projectors					
1.3	Chairs					
1.4	White boards					
1.5	Computers					
1.6	Training manuals					
1.7	Internet connection					
1.8	Imaging machines					
1.9	Laboratory					
1.10	Lab investigations					
1.11	Imaging machines					
1.12	Surgical instruments					
1.13	Air Conditioner					
2	Trainer					
2.1	Certified					
2.2	Has experience					



2.3	Has effective communication skills					
3	Admin staff support					
4	Training Material					
4.1	Available					
4.2	Evidence based					
4.3	Updated					
5	Certification					
5.1	Accredited					
5.2	Has training hours number					
5.3	Has credit hour number					
5.4	Has issue date					
5.5	Has expire date					
5.6	Issue organization					
6	Training Organization					
6.1	Has license from MoH					
6.2	Has license from MoHE					
6.3	Has safety check licence from ministry of interior					
6.4	Has tax registration Number.					

6.5	Affiliated to healthcare organization.					
6.6	Affiliated to international organization.					



To: Mahmoud Nassar  
Cc: Mariez Wasfi  
From: Atta Gebril, Chair of the IRB  
Date: April 2, 2017  
Re: Approval of study

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This is to inform you that I reviewed your revised research proposal entitled "Continuing Professional Development (CPD) in Healthcare Sector in Egypt: Readiness Assessment" and determined that it required consultation with the IRB under the "expedited" heading. As you are aware, the members of the IRB suggested certain revisions to the original proposal, but your new version addresses these concerns successfully. The revised proposal used appropriate procedures to minimize risks to human subjects and that adequate provision was made for confidentiality and data anonymity of participants in any published record. I believe you will also make adequate provision for obtaining informed consent of the participants.

This approval letter was issued under the assumption that you have not started data collection for your research project. Any data collected before receiving this letter could not be used since this is a violation of the IRB policy.

Please note that IRB approval does not automatically ensure approval by CAPMAS, an Egyptian government agency responsible for approving some types of off-campus research. CAPMAS issues are handled at AUC by the office of the University Counsellor, Dr. Amr Salama. The IRB is not in a position to offer any opinion on CAPMAS issues, and takes no responsibility for obtaining CAPMAS approval.

This approval is valid for only one year. In case you have not finished data collection within a year, you need to apply for an extension.

Thank you and good luck.

  
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