Imperial College London

Thesis submitted for the degree of Doctor of Philosophy (PhD)

A realist informed evaluation of medical relicensing in Egypt on physicians' performance.

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Abstract

The introduction of medical relicensing in Egypt signifies a significant shift in how the medical profession is regulated, sparking extensive debate among healthcare professionals. However, details regarding the implementation process, assessment methods, and involvement of stakeholders remain unclear since its announcement in 2017. This PhD study aims to provide context-specific recommendations for Egyptian medical relicensing, addressing gaps in policy, education, and practice.

Using a realist-informed approach, this multi-method study explores the impact of regulatory interventions on healthcare workforce performance, investigates mechanisms and contextual factors influencing relicensing in the Egyptian context, and proposes a tailored relicensing model for Egypt. Drawing on literature from various fields such as health policy, human resources for health, pedagogy, performance, and behaviour change, the research comprises four main studies: a scoping review on relicensure, a systematic review on primary care physician performance, semi-structured interviews, and a modified Delphi study.

Findings underscore the complex interplay between doctors, regulators, and contextual factors in physician performance regulation. It emphasizes the need for a customized approach that considers local needs and cultures, the value of incorporating evaluation criteria like knowledge, skills, safety, communication, and teamwork into the relicensing process, advocates for fostering a growth mindset, continuous learning, reflective practices among physicians, and highlights assessment for learning and empowering physicians to drive improvement.

While medical relicensing holds promise for enhancing professional accountability in Egypt, current plans may fall short of realizing this potential. Proposing a model for medical relicensing in Egypt, the study provides a framework to support national-level efforts in improving physician performance. This evidence-informed framework, supplemented with recommendations for the relicensing portfolio, performance measurements, and context-specific considerations, offers a standardized yet adaptable approach. It can assist policymakers in monitoring and evaluating relicensing initiatives, aligning with both national and global health objectives.

Executive summary

Background: The introduction of medical relicensing in Egypt is heralding a new era for health system governance in the country, which signals a monumental shift in terms of how the Egyptian medical profession is regulated. This complex new policy intervention has given rise to considerable and critical protracted debate amongst health care professionals regarding the appropriate methods, the format, and the feasibility for implementing such a policy. It has also sparked widespread concern that what is currently planned for relicensing may not be fit-for-purpose, nor does it carefully consider context-specific attributes that are applicable to the Egyptian healthcare system. Since the announcement of the introduction of medical relicensing in 2017, information remains scarce regarding how medical relicensing in Egypt will be linked to better performance of physicians, the details regarding the process by which medical relicensing will be undertaken, and the ways through which assessment using evidence, or theoretical frameworks, will inform the development of this large-scale policy intervention. It also remains unclear how healthcare organisations, and individuals, will be involved in undertaking this intervention, and what the plans are for the preparation and roll out which research in this thesis of study addresses. The aim of this PhD of study is to provide new information translational to policy, education, and practice in the form of context-specific and context-sensitive recommendations for the way forward for the Egyptian medical relicensing endeavour, and actionable proposals for progress.

Methods: This is a multi-method study anchored by a realist informed approach investigating what works, how, for whom, to what extent, and in what circumstances, to generate locally relevant evidence to inform policy direction. This PhD study spans the fields of health policy, human-resources-for-health, pedagogy, performance, and behaviour change, and as such literature, theories, and evidence from these various fields have contributed to answering my research questions. New information relevant to policy, education, and practice on the prospective impact of medical relicensing of physicians in Egypt on their performance has been generated, critiqued, and synthesised by means of a critical interpretivist process which was used to ascertain the most important locally sensitive and specific considerations for medical relicensing in Egypt, as well as propose practical and evidence informed recommendations. A total of four studies constitutes the main body of work for this thesis: a scoping review on medical re-licensure, a systematic review on primary care physician performance, semi structured interviews, and a modified Delphi study.

Results: Physicians' performance regulation sits within a complex backdrop of relationships and interactions between doctors, regulators, the contexts within which they operate, and the multiple underlying motivations for physicians' performance regulation. This means that understanding, and balancing, these relationships, motivations, and the interests of the multiple stakeholders and beneficiaries involved, is central to the design and evaluation of regulatory systems if they are to be expected to produce meaningful change and improvement. This firmly reinforces the concept that there isn't a 'one size fits all' approach to instigate performance improvement amongst physicians, and while it is important to seek out best practices and appreciate how different methods can influence change in a plethora of ways, context-specificity and context-sensitivity is imperative to address local concerns, needs and cultures. In the case of Egypt, evidence generated by this thesis of study demonstrate that there is a need for structured and regulated professional accountability within the health system, which the introduction of medical relicensing has the potential to realise. What's currently understood for relicensing to entail however renders the potential for such a regulatory intervention unfulfilled, as elicited from the findings of this body of work. Synthesised findings indicate that essential components that should be included in the Egyptian medical relicensing process include the evaluation of knowledge, skills, performance, safety, quality, communication, partnership, teamwork, and trust with colleagues and patients. It was also conceded that the overall direction of travel that the Egyptian medical relicensing ought to embody is one that fosters a mind-set of growth and enables continuous development and improvement in skills and practices. To realise this, the design of the relicensing process should be geared towards an assessment for learning and should include components to empower physicians to utilise their agency to improve their skills and practices, and to trigger critical, deep, and transformative reflection, as well as behavioural, cognitive, and emotional changes.

Conclusion: In this thesis of study, I explored the linkages between regulatory interventions and health workforce performance, examined how such interventions can produce their effects, investigated how health workforce performance is measured, as well as ascertained how, and what, configuration relicensing will take form in Egypt. I have also identified key knowledge from expert stakeholders in Egypt, and in the field of health workforce globally, in regard to medical relicensing in Egypt to inform the development, and testing, of a co-produced conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt, and the opportunities and challenges of various strategies. This has resulted in the development of a new model for medical relicensing in Egypt that is fit-for purpose, and fit-for-context which is intended to be used to support the progress of physician performance improvement efforts at the national level. As the first of its kind, the evidence-informed newly produced model for medical

relicensing in Egypt is supplemented with a proposal for more all-encompassing components for the medical relicensing portfolio, a menu of measurements for primary care physician performance, context-specific and context-sensitive considerations for the way forward, as well as actionable recommendations for progress. The new model for medical relicensing in Egypt offers robust understanding of the relationship between the moving parts, features, and actors involved in medical relicensing in Egypt, showing a direction of influence that link structures, process, and outcomes, and can be used by policy makers to support the progress of physician performance improvement efforts at the country level in the following ways, first, as a framework for action that can be used to review, monitor and evaluate national regulatory interventions intended to progress physicians performance, secondly, as an evidence informed foundation for a standardized approach for medical relicensing in the country which leverages global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, and health systems, that is crystalised in a locally relevant manner to the Egyptian setting, and thirdly to align as a national framework with global linguistic convention which can be used to track and monitor progress towards universal health coverage and health related sustainable development goals.

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Declaration

I declare that I am the sole author of this thesis, and all the work within is my own, except where referenced or carried out in collaboration with others who are appropriately credited.

Signed: Dr Sondus Hassounah

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Statement of originality

I collected and analysed all the data for this PhD. I designed and undertook the search strategy for the scoping review and systematic review myself; an Imperial librarian was consulted on the final search strategy for both reviews, and a secondary reviewer undertook title and abstract filtration for the systematic review (no disagreement declared). I recruited, conducted, and analysed 12 semi-structured interviews, and recruited, conducted, and analysed three rounds for the modified Delphi study (17 participants took part in rounds one and two, and seven took part in round three, which was in the form of a focus group discussion). I selected the realist methodology and undertook training at the Centre for Advancement in Realist Evaluation and Synthesis (CARES) to familiarise myself with the approach. I made the decision to embed this approach and use it to guide my synthesis and produce the successive context-mechanism-outcome configurations which led to the development of the final conceptual framework, which I have crystallised into an evidence-informed model for medical relicensing in Egypt.

Positionality

It was proposed by Materud that "Preconceptions are not the same as bias, unless the researcher fails to mention them" (Malterud 2001), I would therefore like to disclose that I am aware of, and acknowledge, my position and views having studied and practiced medicine in Egypt years ago. I have interrogated my views and assumptions throughout the research process in order not to bias, or influence, the data or analysis in any way. My familiarity with the research context and setting, coupled with my work experience in health system and health workforce development globally, has created a unique opportunity for me to probe and explore the evidence and the experiences of participants, and the meanings they attribute to them. I care deeply about Egypt, the Egyptian people, and the Egyptian medical community, and I believe that well-informed regulatory policies and governance mechanisms have the capacity to enhance health workforce performance, enrich the clinical experience for both physicians and patients, and lead to improvements in population health outcomes through a stronger health system. I also believe that It's in the interest of patients, physicians, regulatory bodies, academic and healthcare institutions for the Egyptian healthcare system to progress, and to rise to the challenge of attempting to quantify health workforce performance in an equitable, comprehensive, and impactful manner. My impetus to embark on this work was, and continues to be, to provide new information translational to policy, education, and practice in the form of context-specific and context-sensitive considerations for the way forward to support the Egyptian health system strengthening endeavour.

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CHAPTER 1: INTRODUCTION

1.1. General Introduction

Human-resources-for-health, or health workforce, are the backbone of health systems (WHO 2006b) and as such, there is truly "no health without workforce". (Campbell et al. 2014) In many countries, including Egypt, the availability of a qualified health workforce to deliver effective and equitable health services remains inadequate, and so governments continue to feel the urgency to respond to external demand for change. (Bryce et al. 2018; Tazzyman et al. 2018a) This led to a wave of various forms of regulatory interventions introduced globally to increase the productivity and performance of physicians, which include their renewed certification, re-licensure, and revalidation, despite the notable absence of clear evidence regarding the effectiveness of such interventions. (Boulet and van Zanten 2014) None the less health systems, and countries around the world, are embarking on experimental regulatory approaches, such as the case of Egypt, whereby a formal body has recently been created and mandated to lead the development and delivery of medical license renewal.

In 2017, the Compulsory Egyptian Medical Training Authority Egyptian (CEMTA) was formally established, by virtue of the decision of the Prime Minister No. 210 dated 31/1/2016 (MoHE Egypt 2022). The five main objectives of CEMTA were identified at the time to be: 1) Set standards for the content of specialised and medical training, 2) Lay the foundation for evaluating and re-evaluating doctors at different levels, 3) Issue and accredit professional medical certificates in specialised fields, 4) Develop the specifications and accredit medical institutions for training of different medical specialities, and 5) Conduct the national licensing exams for practising medical professionals and relicensing process. (Official Archives-Egypt 2016) Although medical relicensing has been set to be rolled out for a number of years now, it is less clear however, how medical relicensing in Egypt will be linked to better performance of physicians, and the ways through which assessment using evidence, or theoretical frameworks, will inform the development of this large-scale policy intervention. It is also unclear what the process of medical relicensing in Egypt will be, which and how healthcare organisations and individuals will be involved in undertaking this intervention, and what the plans are for the preparation and roll out. This begs the questions: what is the likely impact of medical re-licensing in Egypt on physician performance? What are the likely intended and unintended outcomes? And what policy recommendations can be made to navigate through the enablers and barriers?

In this PhD thesis of study, I explore the linkages between regulatory interventions and health workforce performance, examine how such interventions can produce their effects, investigate how health workforce performance is measured, as well as ascertain how and what configuration relicensing will take form in Egypt. I have also identified key knowledge from expert stakeholders in Egypt and in the field of health workforce globally in regard to medical relicensing in Egypt to inform the development and testing of a co-produced conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt and the opportunities and challenges of various strategies. This has resulted in the development of a new model for medical relicensing in Egypt that is fit-for purpose, and fit-for-context. As the first of its kind, the evidence-informed newly produced model for medical relicensing in Egypt is supplemented with a proposal for more all-encompassing components for the medical relicensing portfolio, a menu of measurements for primary care physician performance, context-specific and context-sensitive considerations for the way forward, as well as actionable suggestions for progress, all of which are intended to be used to support the progress of physician performance improvement efforts at the national level.

Primary care, and primary care physicians, are the points of focus in this PhD thesis of study, to offer a well-defined medical speciality specific context, insights, and perspectives. Primary care is the backbone of health systems, and a strong primary healthcare system is the pillar of any high performing health system. (Starfield 1994; 1991; WHO 2008) It can therefore be argued that a better understanding of approaches to primary care physicians' performance measurement is essential to provide useful information to inform planning, management, and quality improvement at both the practice level, as well as at the health system level. (Haj-Ali and Hutchison 2017; Southgate et al. 2001) There is also robust evidence globally demonstrating that increased primary care physician availability produces a greater effect in areas with high-income inequality, indicating primary care has an equity-producing effect on health; this can be elicited from the observed positive effects of having more primary care physicians, particularly in settings with greater economic inequality, whereby the presence of primary care physicians helped reduce health disparities among different socioeconomic groups. (Shi et al. 2002; Starfield 2001) These strong links between human-resources for-health in primary care and better population health outcomes, especially in resource constrained settings, highlight the potential in improving quality of healthcare, particularly in a primary care setting. Given primary care's impact on the health system, Egypt's primary care physicians are therefore stipulated as a significant cohort of focus to study the potential impact of medical relicensing on, and to provide a prototypical exemplar for

replicable approaches for individual-level performance assessment that can be used for other specialities across the Egyptian health system.

This is a multi-method study anchored by a realist informed approach investigating what works, how, for whom, to what extent, and in what circumstances, to generate locally relevant evidence to inform policy direction. New information relevant to policy, education, and practice on the prospective impact of medical relicensing of physicians in Egypt on their performance has been generated, critiqued, and synthesised by means of a critical interpretivist process which was used to ascertain the most important locally sensitive and specific considerations for medical relicensing in Egypt, and to propose practical and evidence informed recommendations. This PhD study spans the broad fields of health policy, human-resources-for-health, pedagogy, performance, and behaviour change, and as such literature, theories, and evidence from these various fields have contributed to answering my research questions. Later in this chapter (section 1.3) I outline my research aim, objectives, and research questions, and draw out a summary of my approach to data collection.

1.2. The case for change

Egypt has accomplished notable strides in terms of strengthening its health system infrastructure and improving its population health outcomes, which was particularly evident in the attainment of the Millennium Development Goals. (WHO 2015; Government of Egypt 2015; Rannan-Eliya et al. 2022; Awadalla et al. 2009) Much of this progress is a result of the governments' commitment to reforming the health sector, whereby significant improvement, and expansion of primary care in the country has been a central element. The successive governments' commitment to health system strengthening is clearly evident in recent political decisions, and ratified laws, such as: Article 18 of the new Constitution (Devi 2018), which lays the groundwork for achieving universal health coverage, the recently ratified Health Insurance law (Fasseeh et al. 2022; Rannan-Eliya et al. 2022), the restructuring of the undergraduate medical education programme (Abdelaziz et al. 2018; Nassar 2018; Nasser et al. 2021), as well as the establishment of new health and regulatory bodies including the Universal Health Insurance Authority, the General Authority of Healthcare, the General Authority for Healthcare Accreditation and Regulation, and the Compulsory Egyptian Medical Training Authority (Government of Egypt 2015) -- all of which play different roles in the countries' ambitious agenda to transform the health sector outlook.

The introduction of medical relicensing in Egypt is heralding a new era for health system governance in the country marked by medical education and regulation transformations, which signals a monumental shift in terms of how the Egyptian medical profession is regulated. This complex new policy intervention has given rise to considerable and critical protracted debate amongst health care professionals regarding the appropriate methods, the format, and the feasibility for implementing such a policy. It also sparked widespread concern that what is currently planned for relicensing may not be fit-for-purpose, does not carefully consider context-specific attributes that are applicable to the Egyptian healthcare system and structure, nor does it take into account the health workforce capacity and readiness for change. Since the announcement of the introduction of medical relicensing in 2017, information remains scarce regarding how medical relicensing in Egypt will be linked to better performance of physicians, the details regarding the process by which medical relicensing will be undertaken, and the ways through which assessment using evidence, or theoretical frameworks, will inform the development of this large-scale policy intervention. It also remains unclear how healthcare organisations and individuals will be involved in undertaking this intervention and what the plans are for the preparation and roll out which research in this PhD thesis addresses.

The introduction of a health workforce policy intervention such as medical relicensing can be of great value to enhance the safety and quality of medical practice, and can be a step-change in terms of boosting opportunities for active learning, continuous medical and professional development, and upskilling physicians in Egypt, if it is designed and implemented in a fit-for-purpose and fit-for-context manner as argued through this PhD thesis of study.

1.3. Thesis aim, objectives, and research questions

This study spans the broad fields of health policy, human-resources-for-health, pedagogy, performance, and behaviour change, and as such literature from these various fields have contributed to answering my research questions. My research design was underpinned by my methodological approach, which was informed by my research philosophy (please refer to chapter four, Methodology, for more detail). As the strategy that my research activities were based on, my research design was underlined by a logical and clear plan to collect, interpret an analyse data relevant to the research questions I set out to answer. I set forth to incorporate clarity, robustness, and alignment in my research design by mapping out which, when, and how methods are used to collect data, and in what way do these instruments generate evidence that lend themselves to answering specific research questions which address my aim and objectives, as well as inform my

generative theory development. In the next section I outline my research aim, objectives, and research questions, and draw out a summary of my approach to data collection.

Aim: To provide new information translational to policy, education, and practice in the form of context-specific and context-sensitive recommendations for the way forward for the Egyptian medical relicensing endeavour, and actionable suggestions for progress.

Objectives and underlying research questions

Objective 1: To appraise the available evidence on medical relicensing and on health workforce performance and explore whether/how they are linked.

Underlying research questions:

- What is the evidence on the effectiveness of relicensing, how does it work, & how is 'effectiveness' defined?
- How is health worker performance measured? Which outcome measures are used to measure it? And what is the evidence on how effective these measures are to explain variations in performance?
- What is the evidence base on the linkage between relicensing and performance?

Objective 2. To examine the medical regulatory environment, particularly licensing, and primary care in Egypt.

Underlying research questions:

- How does medical licensing function in Egypt? And how has it evolved over the years?
- What is being done to prepare for relicensing? And what shape is relicensing expected to take in Egypt?
- Who are the relevant stakeholders involved in the process of relicensing?
- How is primary care organised and delivered within the Egyptian health care system? How does it function?

Objective 3: To co-produce a conceptual framework of how relicensing is expected to affect the performance of primary care physicians in Egypt.

Underlying research questions:

- How is relicensing expected to take form in Egypt?
- What are the likely intended and unintended outcomes (with a particular emphasis on the cohort of primary care physicians)?

- What practical recommendations can be made to navigate through the enablers and barriers?

1.4 Synopsis of inquiry undertaken during this doctoral study

To develop my initial theoretical constructs regarding the linkage between medical relicensing and performance of primary care physicians it was important to, firstly, fully understand how regulatory interventions such as relicensing can produce their effects; that is, what are the causal mechanisms at work in the process of relicensing and that of health workforce performance appraisal. Identifying causal mechanisms in the health workforce performance appraisal process would contribute to building the program theory of how physicians' performance is impacted by regulatory interventions such as relicensing and can help build a construct of how relicensing is expected to affect the performance of primary care physicians in Egypt when it's rolled out.

I therefore set out to scope and appraise the literature on international medical validation systems through a scoping review on medical relicensure, which was subsequently expanded to include revalidation, medical appraisal, and recertification to encompass a wider scope of understanding of medical validation systems globally, and to identify causal mechanisms in the health workforce performance evaluation process (Chapter six). Guided by a critical interpretivist approach for the analysis and synthesis, I used an iterative and dynamic technique to data selection, and critically examined the underlying assumptions in the literature identified through the scoping review. This enabled me to explicitly identify underlying theories at work in the health workforce performance evaluation process which informed and underpinned the causal mechanisms of interest. The review was iterative in terms of its search and scope and was used to further refine the initial programme theory hypothesised at the outset of this research (Methodology chapter four, section 4.7.1, page 55). I've also conducted supplementary searches which were purposive and undertaken when it was identified that I needed more data on specific theories regarding different aspects of the programme theory. I used the realist logic to underline my approach to evidence synthesis and to develop and refine each component of the initial programme theory. Evidence synthesis using the realist logic takes a generative approach to causation, which essentially means that, in order to draw meaningful conclusions about cause-and-effect relationships between two events, x and y, or in this case 'relicensing' and 'physicians' performance', three key components are necessary: the outcome (O), the underlying mechanism (M), and the context (C). In other words, to infer causation (i.e.: Outcome), it's essential to not only identify a relationship, but to also understand how one event leads to the other (i.e.: Mechanism), and under what circumstances this relationship

takes place (i.e.: Context). This context-mechanism-outcome configuration, which is central in realist theory building and the refinement process in this approach, was rooted in the study designs, evidence generation, analysis, and synthesis throughout this PhD of study.

To identify and unpack how health workforce performance is measured, and which outcome measures are used to quantify it, I embarked on a systematic review of health workforce performance, with a focus on primary care. This was conducted in parallel to the scoping review, which allowed for the program theory development and refinement to draw out additional context-mechanism configuration that would further inform how relicensing works in various contexts, and which underlying mechanisms lend themselves to triggering such effects (Chapter seven). Initial scoping interviews were also conducted at this point, with global and national stakeholders, to draw out some of the experiences, debates, and opinions on the interlinkages between various regulatory mechanisms and performance, and the preliminary discussions on the subject matter. At this stage, the appraisal of the available evidence on medical relicensing and on health workforce performance, as well as the linkages between them was concluded by giving rise to the preliminary program theory, and context-mechanism-outcome configuration, on how relicensing as an intervention works. This fulfilled objective one of this PhD, as outlined in section 1.3 of this chapter, and I subsequently moved on to further data collection, appraisal, and synthesis, which focused on the Egyptian context.

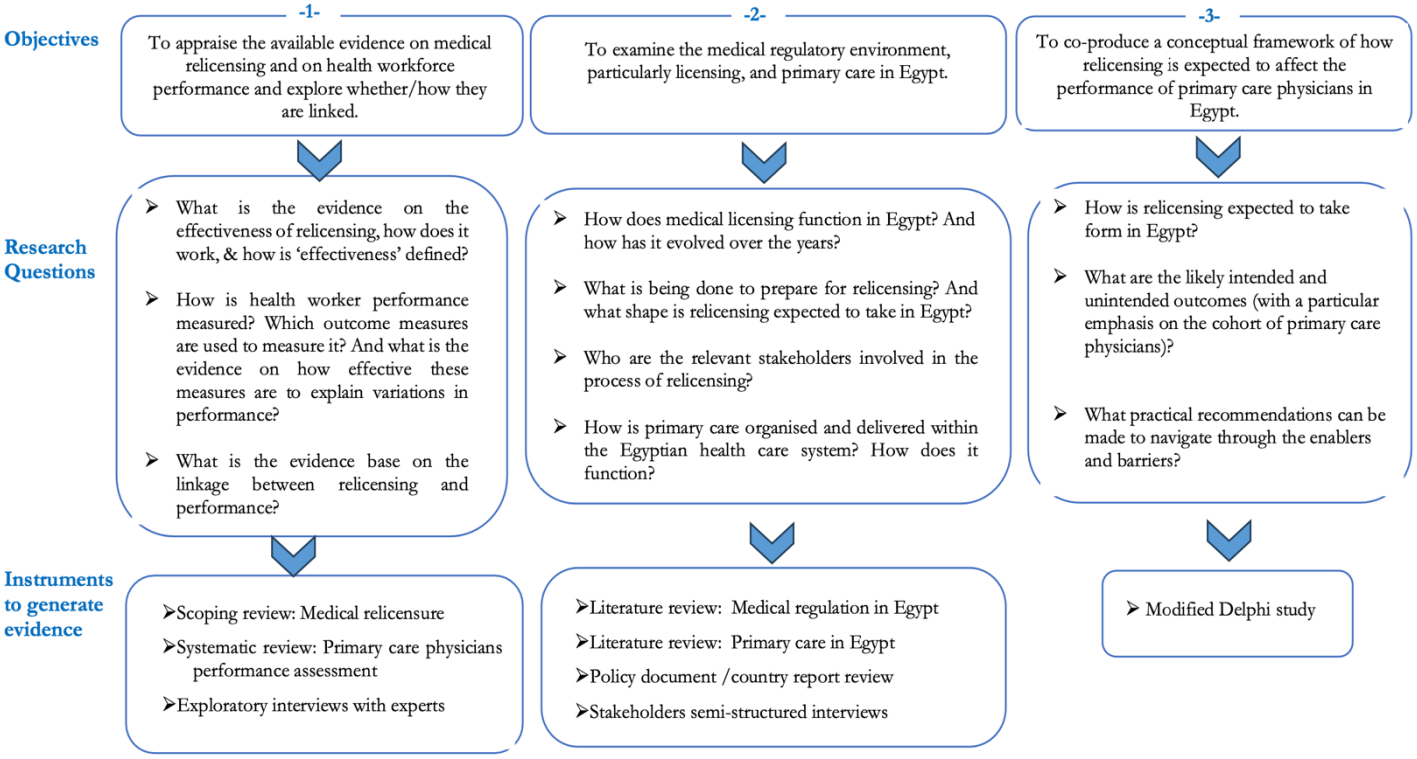
To realise objective two, three lines of inquiry were undertaken; 1) How does medical licensing function in Egypt (and how has it evolved over the years?)?; 2) What is being done to prepare for relicensing (and what shape is relicensing expected to take in Egypt?)?; and 3) How is primary care organised within the Egyptian health care system, and how does it function? Literature and policy document reviews, as well as semi-structured interviews were undertaken to generate knowledge and understanding to answer these queries, which were then compared and reviewed considering the program theory developed earlier for further refinement (Chapters four and eight). The stakeholders interviews were informed by the data synthesis up until that stage, and was primarily used to: 1) Confirm knowledge regarding the medical regulation landscape in Egypt, 2) Gauge the level of consistency in terms of understanding of experts regarding current preparation for relicensing in Egypt (and the shape relicensing is expected to take), and 3) Identify key considerations to inform the preliminary conceptual framework showing how relicensing is expected to affect the performance of primary care physicians in Egypt. The semi structured interviews identified key knowledge and advanced the understanding in terms of how and why health workforce appraisal works in the Egyptian context, and how, and what, configuration

relicensing is expected to take form in Egypt. This was fundamental to further refine the program theory and the context-mechanism-outcome configuration, and underscored how relicensing is expected to affect the performance of primary care physicians in Egypt, as well as advanced the understanding around modifying and implementing regulatory processes intended to improve physicians' performance (Chapter eight).

The resulting new, and context-specific, information, which maps the various ways by which this regulatory intervention can affect performance of physicians in Egypt, and the opportunities and challenges of various strategies, created a unique opportunity to 'test' this new knowledge, generate further insights, and explore a variety of options which medical relicensing in Egypt, as a policy intervention, can encompass. This was undertaken using a modified Delphi approach (Chapter nine). The modified Delphi questionnaire was developed following further refinement of the context-mechanism-outcome configuration in light of the data synthesis from the previous stages, and was disseminated to identify what the priorities are, and build consensus around, the implementation of medical relicensing in Egypt in an effective way. Following a series of rounds using the Delphi technique, intermingled with controlled opinion feedback, and the opportunity for participants to modify their responses, a co-produced medical relicensing conceptual framework for Egypt was developed in order to provide evidence informed guidance translational to policy, education and practice. The framework sets out the broad areas which should be addressed in medical relicensing in Egypt (Chapter ten - figure 10.1). The framework builds on the revised context-mechanism-outcome configuration, which provides structurally cohesive explanations of the practical realities and challenges involved in complex interventions such as relicensing and draws on the exhaustive realist perspective of complexity and the number of different factors considered that underpin it. It is anchored by the realist theory of causation, and illustrated using the Donabedian model for quality of care which underscores its evaluative perspective, and its potential to be used for monitoring progress. It also reflects the multiplicity of components, features and characteristics that should be reflected in medical relicensing and the processes at work. The framework itself, and the suggested components for the relicensing portfolio that follow, crosscuts medical relicensing of all specialities in Egypt in an all-encompassing manner, however an accompanying menu of measurements intended to assess, plan, and prioritise measures of physicians' performance in primary care specifically was developed to offer a well-defined medical speciality specific acumen.

An overview of my research design road map which demonstrates my systematic approach to data collection and alignment between the thesis objectives, underlying research questions and instruments to generate evidence can be seen in figure 1.1.

Figure 1.1: PhD research design road map



Source: Author

1.5 Structure of the thesis

In chapter one – Introduction: I provide an outline of my research and the rationale for undertaking it, outline relevant concepts and thought processes, set out the research questions, aims and objectives, as well as describe the relevance and importance of this work to practice and policy. I conclude by providing a synopsis of the inquiry undertaken during this doctoral study and outline a summary of the thesis chapters' contents.

In chapter two – Background: I contextualise this thesis of study, and its relevance, by examining fundamental notions which inform the direction of travel of this thesis, namely medical licensure, quality of healthcare and health workforce performance evaluation. I also provide a summary of existing research which my work builds and expands upon.

In chapter three - The Egyptian context: I provide an overview of the health system configuration in Egypt and unpack the medical regulatory and medical educational landscapes embedded within it. I specifically examine the health system governance, policy changes and reforms, and disentangle the backdrop within which the policy intervention of focus for this thesis (i.e.: medical relicensing) is expected to operate within. I also shed light on primary care as an area of focus and discuss evolutionary changes for this field within the Egyptian health care system. This chapter is informed by iterative literature reviews including policy document analysis and evaluation of country reports (national and international), as well as exploratory interviews with expert stakeholders.

In chapter four – Methodology: I outline the research philosophy that underpins my research, explain my ontological, epistemological, and axiological approaches, and justify my research methodology. I also examine the parameters, paradigms, and the purpose I confer to my methodological approach of choice (the realist approach) and elucidate its alignment with the contribution my research inquiry aims to make in terms of producing context-specific and context-sensitive considerations for the way forward for the Egyptian medical relicensing endeavour.

In chapter five – Methods: I discuss in detail the methods I used to collect and synthesise data. I specifically elaborate on the methods for the four principal empirical studies in this thesis which are: 1) Scoping review: Medical re-licensure (the results for which are discussed in chapter six), 2) Systematic review: Primary care physicians performance assessment (the results for which are discussed in chapter seven), 3) Semi structured interviews (the results for which are discussed in chapter eight), and 4) Modified Delphi study (the results of which are discussed in chapter nine). Each of the four studies are discussed in this chapter in terms of the rationale for choice, design, approach, and the steps undertaken to complete them.

In chapter six - Physicians' performance validation systems: I appraise and analyse the literature on physicians' validation systems, and regulatory interventions used globally to attempt to quantify physicians' performance, which I then synthesize, to inform the development of a preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance. I specifically explore the theoretical underpinnings and the body of evidence around how physicians' performance regulatory interventions work, such as medical relicensure and variations of it, and in what way have they produced their effects. This chapter is informed by the results from the scoping review on medical relicensure. The new knowledge elicited from the scoping review formed the basis for the development of a preliminary conceptual

framework postulating how medical relicensing is expected to affect physicians' performance, which in turn informed the next stage of this PhD inquiry, particularly the semi structured interviews (chapter eight).

In chapter seven - Primary care physicians' performance assessment: I appraise and analyse the literature on primary care physicians' performance assessment, with a particular focus on how individual primary care physicians' performance is evaluated globally. I ascertain and unpick how primary care physicians' performance is reported in the literature, and identify meaningful, actionable information in the form of metrics for primary care physicians' performance assessment. I also systematically identify relevant and applicable data relating to primary care physicians' performance assessment approaches on the individual level. This chapter is informed by the results of the systematic review on primary care physicians performance assessment. The findings from the systematic review that informed this chapter informed the next phase of this PhD inquiry, in particular, the variations in terms of inputs for the contexts, mechanisms, and outcomes components of physicians' validation systems & regulatory interventions, which in turn informed the basis for the development of the preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance.

In chapter eight - Medical relicensing considerations for the Egyptian health system: I identify and analyse first-hand insights from experts in the fields of health workforce, medical education, training, and capacity building, and those who are directly involved in the process of medical relicensing in Egypt. More specifically, I explore perceptions regarding the shape relicensing is expected to take in Egypt and the preparation underway for relicensing, investigate how it's expected to affect the performance of physicians in Egypt, as well as identify key considerations that inform future directions. This chapter is informed by the findings and synthesis from the semi-structured interviews study, which identified key knowledge from expert stakeholders, in Egypt and in the field of health workforce globally, regarding medical relicensing in Egypt. The findings from the semi-structured interviews that informed this chapter informed the next stage of this PhD inquiry, the modified Delphi questionnaire, which helped identify what the priorities are, and consensus around, the implementation of relicensing in Egypt in an effective way.

In chapter nine – Conceptual considerations: The impact of medical relicensing on physicians' performance in Egypt: I ascertain and generate consensus around key consideration

and priorities to support effective implementation of medical relicensing in Egypt. More specifically, I examine and generate consensus around how relicensing as a tool can be used to improve physicians' performance in Egypt and discern the associated opportunities and challenges. This chapter is informed by the findings and synthesis from the modified Delphi study. The findings from the modified Delphi study that informed this chapter informed the final phase of this PhD inquiry, which enabled the development of a co-produced conceptual framework demonstrating how relicensing is expected to affect the performance of physicians in Egypt and discern the associated opportunities and challenges.

In chapter ten – A framework for medical relicensing in Egypt: I consolidate the synthesised findings from across all studies constituting the body of this work and introduce a new model for medical relicensing in Egypt which is intended to be used to support the progress of physician performance improvement efforts at the national level. The new model for medical relicensing in Egypt builds on the developed and tested preliminary conceptual framework derived from the Context-Mechanism-Outcome configuration specifically produced for this research and is supplemented with a proposal for more all-encompassing components for the medical relicensing portfolio, as well as a menu of measurements for primary care physician performance.

In chapter eleven – Discussion: I discuss my synthesized findings in the context of my research questions, and contextualise this thesis of study, and its relevance. I also reflect on the need for the contribution this thesis makes, its utility, it's strengths and limitations, as well as explain the implications of the new knowledge I produced for scholarship, policy, and practice.

In chapter twelve – Conclusion: I recapitulate the key policy relevant health systems knowledge generated by this PhD of study and outline how it can be used to support the Egyptian medical relicensing endeavour. This chapter concludes with context-specific and context-sensitive recommendations for the way forward for the Egyptian medical relicensing undertaking, a proposal of actionable recommendations for progress, and a summary of final remarks.

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In this chapter I provided an outline of my research and the rationale for undertaking it, outlined relevant concepts, and thought processes, set out the research questions, aims and objectives, as well as described the relevance and importance of this work to policy and practice. In the next

chapter I contextualise this thesis of study, and its relevance, by examining fundamental notions such as medical licensure, quality of healthcare and health workforce performance evaluation, which inform the direction of travel of this thesis, as well as provided a summary of existing research which my work builds and expands upon.

CHAPTER 2: BACKGROUND

2.1 Introduction

> "I will use treatments for the benefit of the ill in accordance with my ability and my judgment, but from what is to their harm and injustice I will keep them"
>
> Hippocratic Oath (Edelstein 1943)

There are broadly three main objectives for professional regulation, these are to: 1) Have a system in place to ensure professional accountability, 2) Establish and ensure that standards of care are maintained at acceptable levels, and 3) Promote better quality of care. (Brennan et al. 2017; Sutherland and Leatherman 2006b; Merkur et al. 2008) The concept of regulating physicians' practice can be traced back almost 4000 years ago in the code of Hammurabi (1754 BC) (Johns 1903), where standards of physician's behaviour, accountability, and detailed description of the relationship between practitioners, and their patients, including fees and penalties were circumscribed. (Violato 2016) In Babylonian times, and in the centuries that followed, physicians regulation depended on two distinct notions: 1) A governing body that establishes the basic qualifications professionals must meet to be permitted to practice; and 2) The authority and ability of that governing body to regulate, for quality purposes, with the possibility to rescind that permit if evidence of unmet standards are found. (Ginsburg and Moy 1992)

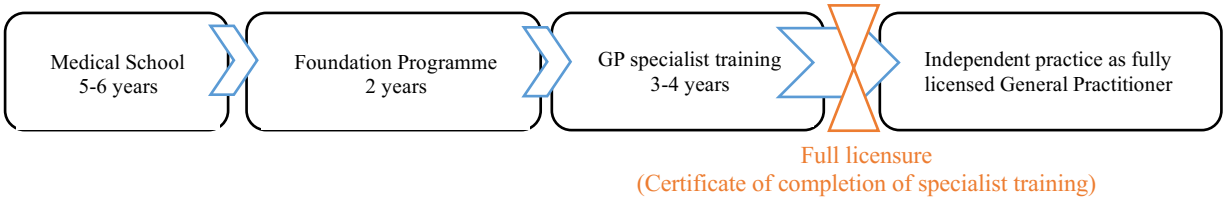
The 'permit to practice' currently refers to licensure (Merriam-Webster 2010; Oxford Dictionaries 2018), registration (GMC 2016), or certification (Dauphinee 2002; Oxford Dictionaries 2012), which, although are often used interchangeably, have distinctly different meanings. (Dauphinee 2002) Both licensure and certification, and to some extent registration, signpost the competence of an individual in a particular area of practice which is based on assessment(s) centred around predetermined criteria. (Dauphinee 2002) Licensure is defined as: "…the process by which society, acting through government agency, or agency authorised by government, grants permission to an individual to engage in a given occupation or use a particular title" (Mueller 1985) and hence denotes an obligatory process that must be completed prior to entering practice. On the other hand, certification usually refers to another, more specialised, form of qualification and may not necessarily precede licensure. (Dauphinee 2002) Registration can sometimes be synonymous with licensure or can simply represent 'being added to the medical register' which in some countries is granted upon completion of a registration year of practice (equivalent to Foundation Year 1 in the United Kingdom) after graduation from medical school. (De Vries et al. 2009)

In some countries, for example small autonomous regions in Spain, medical regulatory authorities do not formally distinguish between registration and licensing processes, however, in others, for example Egypt, Germany and Italy, registration and licensing are two separate processes. In Egypt, for example, registration is exclusively controlled by the medical syndicate, whereas licensing is the remit of the Ministry of Health; though doctors cannot apply for a license to practice with the Ministry of Health until they have registered with the medical syndicate. (De Vries et al. 2009; Archer et al. 2015)

It remains however, that medical licensure is globally accepted as the gateway to safe and competent medical practice (Merriam-Webster 2010; Oxford Dictionaries 2018). It is the official means to recognise that medical professionals have met standards to qualify them to be 'fit to practice'. Fully licensed medical practitioners are expected to be skilled to provide independent quality services to people, they are allowed to consult and/or perform medical procedures and prescribe prescription-only medicines in their respective specialities. (General Medical Council 2013, 2016) In some countries, for example the United Kingdom, medical professionals are required to periodically renew their permit to practice proving that they have maintained their skills, which is also known as relicensing or revalidation. (GMC 2016; De Vries et al. 2009)

For a medical professional to be fully licensed they must first complete an undergraduate study in medicine followed by foundation training and post graduate speciality training. Upon successful completion of their specialist training, they attain a qualification as an independent practitioner; this varies in the duration and scale across health systems around the world. An example of the United Kingdoms' pathway to license general practitioners can be seen in figure 2.1 below.

Figure 2.1: Pathway to General Practice full licensure in the United Kingdom



Source: Reproduced from the Royal College of General Practitioners advocacy material (Haslam 2011)

The ultimate goal of this rigorous process of education and training leading up to licensure is to produce a qualified health workforce capable of providing quality healthcare services to people. But what does that mean in terms of post licensure practice? Having achieved licensure, are physicians still able to maintain the same level of capability and quality in their practice 5, 10, or even 20 years after licensure? What happens to the 'quality' of services provided by physicians

from the point of licensure onwards? And what are the intended versus actual impact of licensure? The methodological difficulties surrounding these questions has resulted in a paucity in the research literature on the subject, which is understandable given the challenge of identifying a substantive causal link. Establishing a causal link between licensing and quality requires mature health systems with state-of-the-art and progressive health information systems that enable linking individual physician-based data to ensuing performance. This has been seen in the case of Canada (Tamblyn et al. 1998) where researchers were able to establish that licensing examination scores were significant predictors of consultation, prescribing, and mammography screening rates in initial primary care practice. This was made possible through physician linked practice data from the provincial health insurance agency (Regiedel Assurance- Maladie du Quebec) and College of Family Physicians of Canada. (Tamblyn et al. 1998; Wenghofer et al. 2009)

Although attainment of a medical licence is conceptually similar in different countries, there are clear variations in the way by which medical licences are realised, and the length of time they are valid for across health systems. In some countries, licensing takes place in steps (provisional then full licensure) such as in India and Nigeria, and in other countries this process is time bound (e.g.: Poland) where a provisional license is required to be maintained for a number of years before full licensure can be achieved. (De Vries et al. 2009) Some countries offer lifelong medical licenses (e.g.: Egypt and Italy), others require periodic renewal of medical licenses where doctors are required to demonstrate proof of maintaining their skills (e.g.: the United Kingdom). (GMC 2016; De Vries et al. 2009) There is high variability across health systems however (Chopra et al. 2008) and there's uncertainty as to whether this can explain, or influence, at least in part, the observed differences in physician performance and quality of healthcare provision across the globe. (Hanson 2008; Fung et al. 2010)These differences and variations in physicians' performance have been increasingly acknowledged over the past two decades, so has the notion that initial medical certification and licensure obtained at the end of specialist or residency training is no longer adequate to sustain quality of care across a physician's career. (Sharp et al. 2002) This stipulates that the 'once in, good for life' model requires more thoughtful, well-structured, and continuous approaches to learning in order to improve practice and performance.

The aforementioned concerns related to variations in physician performance led to an impetus for development of various national validation systems across the globe (Grol, Baker, and Moss 2002), all of which seem to be geared towards addressing concerns related to meeting key healthcare indicators (Mcglynn et al. 2003), quality of healthcare measures (Institute of Medicine 1999; Forster et al. 2004) and growing public demands for transparency and accountability of health systems.

The past 20 years has seen an emergence of a variety of validation systems across the world (Horsley et al. 2016), all of which essentially trying to achieve the same purpose of keeping track of, and officially documenting, health workers fitness to practice. Within this fairly new territory of physician validation systems, evidence-based approaches for implementation are scarce, and so, unsurprisingly, various methods to assess physicians' fitness to practice can be found across health systems.

There are broad variations in the approaches used to attempt to quantify health workers fitness to practice across health systems that can be found in the literature (Pringle 2006; Hawkes 2012; Teirstein 2015; Horsley et al. 2016), these vary from continuing medical education approaches (for example: providing evidence for attending educational activities and events), to audits and gathering performance related data. There's also variability in the names and definitions used to describe these national validation systems, ranging from renewal of licence (relicensing), revalidation, and recertification, each aiming to achieve a slightly different objective. This variability can be explained, at least in-part, by the fact that policies that shaped those validation systems were not necessarily evidence-informed or were replicated from other systems missing an opportunity for a more context-specific approach that can lend itself to a more targeted effect.

2.2 Quality in healthcare

Many definitions of quality can be found both in relation to healthcare and health systems (WHO 2006a). The famous 'original six' healthcare quality domains outlined by the Institute of Medicine in its instrumental report (Institute of Medicine 2001) on healthcare quality improvement are:

1. **Safety:** Avoiding injuries to patients from the care that is intended to help them.
2. **Effectiveness:** Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit.
3. **Patient-centeredness:** Providing care that is respectful of, and responsive to, individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.
4. **Timeliness:** Reducing waits and sometimes harmful delays for both those who receive and those who give care.
5. **Efficiency:** Avoiding waste, including waste of equipment, supplies, ideas, and energy.
6. **Equity:** Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

Although definitions of quality tend to vary in different settings, the seminal work by Raleigh and Foot (Raleigh and Foot 2010) on definition of quality showed that some themes, such as safety, effectiveness and patient experience are common to most quality frameworks in the literature (Raleigh and Foot 2010; Institute of Medicine 2001); others, such as efficiency, capacity, value for money are less frequent (Raleigh and Foot 2010) (table 2.1). Their work was guided by observations of how a number of international organisation, such as the Institute of Medicine's (IOM), Agency for Healthcare Research and Quality (through its 'National Healthcare Quality Report' and its sister publication, the 'National Healthcare Disparities'), Organisation for Economic Co-operation and Development's (OECD), Care Quality Commission (CQC), and healthcare systems, such as the NHS (through its 'Quest for Quality in the NHS: A mid-term evaluation of the ten-year' and the 'The Quest for Quality in the NHS: Refining the NHS reforms') report on domains of quality.

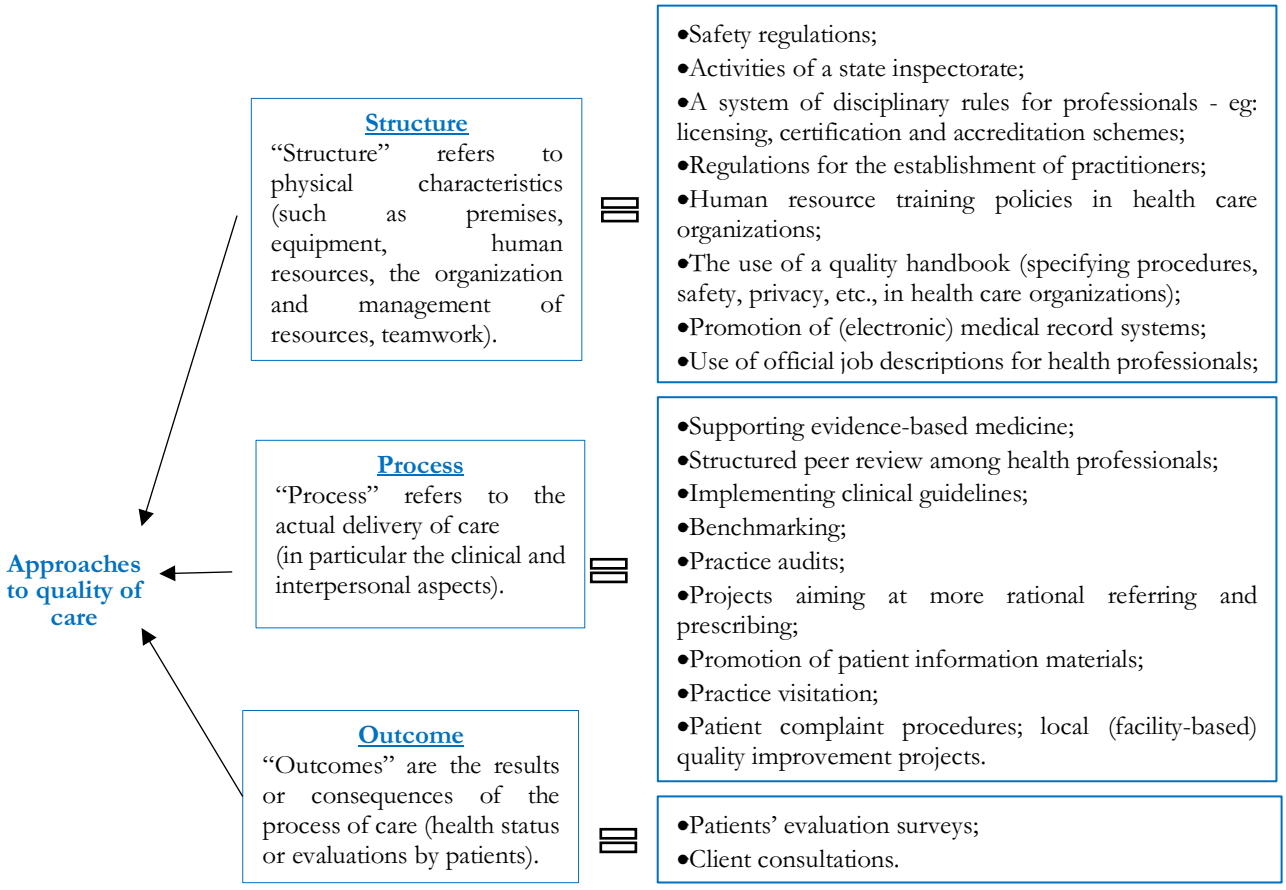
Table 2.1: Quality of care domains

Domains	**IOM**	**OECD**	**NHS: Quest for quality**	**NHS: Performance assessment framework**	**NHS: Next stage review**	**CQC**
Safety	✓	✓	✓		✓	✓
Effectiveness	✓	✓	✓	✓	✓	
Outcomes of Care				✓		✓
Patient Centeredness and patient experience	✓	✓	✓	✓	✓	✓
Timeliness	✓		✓			
Accessibility			✓	✓		
Efficiency	✓			✓		
Value for money						✓
Capacity			✓			
Equity	✓		✓			
Healthy, independent living						✓
Health improvement				✓		

Reproduced from: Veena S Raleigh and Catherine Foot's 'Getting the measure of quality Opportunities and challenges' (Raleigh and Foot 2010)

There are also a number of different approaches to quality management mechanisms. Most famously, based on the well-known framework developed by Avedis Donabedian (Donabedian 1980; Donabedian et al. 1988), mechanisms for quality management can focus on the structure of care, the process of care and/or the outcomes of it. As illustrated in figure 2.2 below, the 'structure', process' and 'outcome' approach refers to a number of characteristics that are unique to each aspect.

Figure 2.2 Dimensions of quality of care using the Donabedian approach



Reproduced from: Avedis Donabedians' 'The Definition of Quality and Approaches to Its Assessment.' (Donabedian 1980)

care; that interpersonal skills can increase patient compliance and satisfaction (WHO 2003); and that 'good' care should be safe and caring (CQC 2015), for the purpose of this research I infer the safety and effectiveness domains as the most relevant for what is meant by 'quality' in relation to physicians performance, which has been described as structural, process, and outcome based approaches to improvement in quality of healthcare (Catto 2008; Burge 2007; Archer et al. 2016; Norcini et al. 2014)

2.3 Human resources for health

Human-resources-for-health are defined as "all people engaged in actions whose primary intent is to enhance health". (WHO 2006b) Robust evidence corroborates that human-resources-for-health are fundamental to improvements in population health, to the effectiveness of health systems, and to inclusive economic growth (WHO 2006b; Campbell et al. 2014; WHO 2016; 2022), and that investment in the health and care workforce, particularly investments targeted towards skill development and education, are pivotal to far-reaching health, social, economic and security gains for all countries. (AHPSR and WHO 2009; WHO 2022; Cometto and Witter 2013; Fritzen et al. 2007; WHO, ILO, and OECD 2018; Global Health Workforce Alliance 2014; Global Health Workforce Alliance and World Health Organization 2008)

There's no dispute that skilled health workers are critical to achieving both health-related Sustainable Development Goals (SDGs) and national health goals (UN 2015; Boulet and van Zanten 2014), and that they constitute the greatest investment, and expenditure, in the health sector. Not only that, but also that appropriate investment in the health and care workforce can accelerates progress across a range of other SDGs including SDG 3 (good health and well-being), SDG 1 (No poverty), SDG 4 (Quality education), SDG 5 (Gender equality) and SDG 8 (Decent work and economic growth) and that the health and care workforce are crucial to the attainment of Universal Health Coverage (UHC). (WHO 2015; WHO and UNICEF 2021; Cometto and Witter 2013)

The health workforce is an integral building block of any, and all, health systems (AHPSR and WHO 2009; Birn et al. 2009; Papanicolas and Smith 2013) and targeted human-resources-for-health interventions, and the policies that shape them, have been empirically linked to increased productivity and better quality of healthcare. (Chen et al. 2004; Koch, Mcgrath, and Lundquist 1996) However, the evidence regarding the effects of relevant and context specific human-resources-for-health policy options to guide policy makers, particularly in Lower-Middle Income Countries (L-MICs) remains inadequate (Chopra et al. 2008), with most of the available research focusing on policy options that alter the organisation of human resources, rather than examining educational, regulatory and training intervention options within these contexts. It has been mentioned earlier that robust evidence does exist demonstrating that increased primary care physician availability produces a greater effect in areas with high-income inequality, indicating primary care has an equity-producing effect on health (Shi et al. 2002; Starfield 2001) and that strong links between human-resources-for-health in primary care and better population health

outcomes, especially in resource constrained settings, such as L-MICs, highlight the potential of human-resources-for-health in improving quality of healthcare, particularly in a primary care setting. However, improving quality of care is not simply a function of increasing the size of the health workforce, it is also, and crucially, a function of skill, and maintenance of that skill. To produce a health workforce fit to practice safely, and effectively, investment in lengthy and expensive medical education is imperative (GMC 2015; Walsh et al. 2013; Walsh 2015; Morrison 2005; Toffler 2012; BMA 2013), but so is the investment in lifelong learning, development, and improvement.

2.4 Health workforce performance

The concept of physician performance assessment was introduced by Avedis Donabedian in 1966 to examine health care quality, and related attempts to systematically measure it, with an eye towards improving health care delivery. (Donabedian 1966) Since then, the concept remains central to health policy considerations. It has been long recognised that there are two major approaches to the evaluation of performance which are "the assessment of process, and the assessment of outcome" (Donabedian 1978). As defined by Donabedian, the assessment of process is the "evaluation of the activities of physicians and other health professionals in the management of patients", whereas the assessment of outcome is the "evaluation of the end results in terms of health and satisfaction". (Barro 1973)

Physicians' performance is defined differently across the globe, (Diallo et al. 2003) which has led to little consistency in terms of how human-resource-for-health strategies related to individual level performance are monitored and evaluated. Once clinicians move on from training and venture into the real world of medical practice, measuring their ability to practice well, or even safely, becomes more complex for a number of reasons (Barro 1973; Freeman 2002; Scheffler et al. 2016.; Clancy 2008; Clancy 2007; Leonard and Masatu 2017; Leonard et al. 2015), these include: 1) The context and environment within which physicians practice is dynamic and is influenced by a number of different, and often conflicting, variables; 2) Patients often have complex needs, and physicians often only provide a portion of direct care within a complex health and care environment; 3) The landscape within which physicians operate is continuously changing and evolving with new illnesses emerging, and new technology developing rapidly; and 4. The majority of measures that currently exist to evaluate individual physicians' 'ability' are measures of how individuals apply their knowledge and skill set, and almost all of which use traditional written and clinical observation methods in controlled and simulated clinical environments.

Canvassing the literature uncovered broad variations in the methods and metrics used to attempt to measure and evaluate health workers' performance, which include responsiveness, availability, competence, productivity, quality, amongst many others (Leonard et al. 2015; Scheffler 2012; Overeem 2012; Overeem et al. 2007) therefore making 'performance' quite elusive to pin down. It remains however, that meaningful and relevant individual level performance data is key to help physicians understand their landscape of practice, and for policy makers to make evidence informed decisions. This is relevant to all medical specialities, including primary care, which is the population of interest in this PhD of study. A robust and strong primary healthcare system is a main pillar of any high performing health system (Starfield, Shi, and James 2005; Kruk et al. 2010), and by extension, a systematic approach to primary care physicians' performance measurement and evaluation is fundamental to provide valuable information to inform planning, management, and quality improvement efforts (ideally in a timely and ongoing manner) at the physician level, the practice level as well as the health system level. (Haj-Ali and Hutchison 2017; Southgate et al. 2001)

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In this chapter I contextualised this thesis of study, and its relevance, by examining fundamental notions such as medical licensure, quality of healthcare and health workforce performance evaluation, which inform the direction of travel of this thesis. In the next chapter I provide an overview of the health system configuration in Egypt, examine the health system governance, policy changes, and reforms which the policy intervention of focus for this thesis (i.e.: medical relicensing) is expected to operate within, as well as shed light on primary care as an area of focus and discuss evolutionary changes for this field within the Egyptian health care system.

CHAPTER 3: THE EGYPTIAN CONTEXT

3.1 Introduction

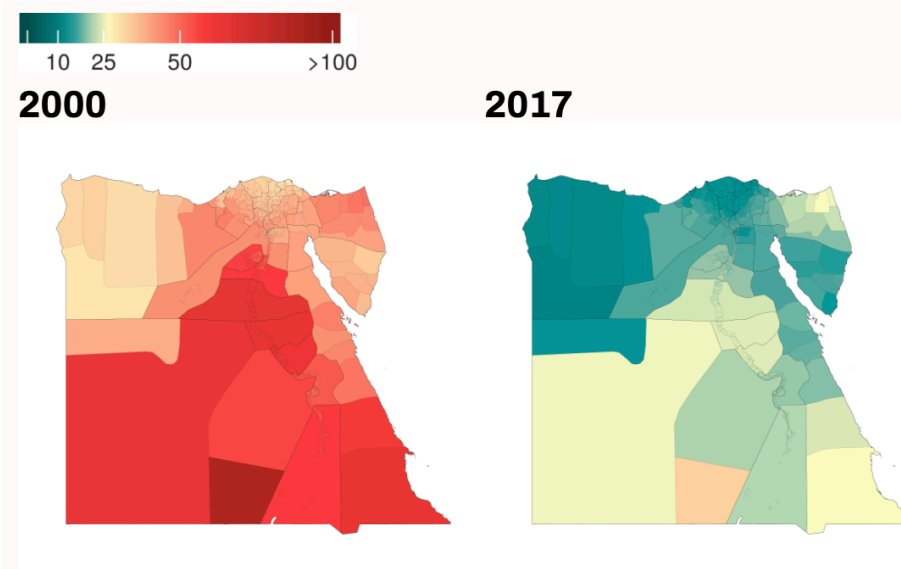
Egypt is one of the largest and most populous countries in the Middle East and North Africa. (WHO 2018) In 2020, the latest population figures stood at 105,774,332 across all 27 governorates of the country; approximately 20% of which are between 15-24 years of age. (CAPMAS 2023) The majority of the population resides in the Nile Delta and along the Nile River (57% of which live in rural areas), and most recent figures show the average life expectancy at birth is 72 years of age, and literacy rate on average is 73.9% (higher for the age group 15-24 years of age at 98.3%). (CAPMAS 2023)

The health care infrastructure in Egypt is quite extensive, with approximately 95% of the population living within a distance of five km from a public health facility. (WHO 2015) However despite such far reaching physical access to healthcare, broad variations exist between the quality and safety of healthcare provision, as well as distribution of healthcare professionals, with rural and remote areas experiencing acute shortages. (WHO 2018; MoHP et al. 2015; Rannan-Eliya et al. 2022) Egypt's healthcare system is highly pluralistic whereby health services are managed, financed, and provided by various sectors of the government, under different ministries and different laws, operating with variable levels of independence. (WHO 2018) Services are also provided by the private sector through providers of variable qualification and variable levels of services; according to a household survey conducted in 2010, approximately 50% of outpatient care is sought at private healthcare facilities (with approximately two-thirds of births taking place in private healthcare setting), 30% at pharmacies, and only 20% at public healthcare facilities. (WHO 2015; MoHP and WHO 2022)

Noncommunicable diseases pose a significant burden in the country, contributing as high as 85% of all deaths. (WHO 2015; MoHP et al. 2015) Among these, cardiovascular diseases constitute 46.2%, cancers 13.8%, respiratory diseases 4.2%, and diabetes mellitus 1.4% of the total mortality. Approximately 18% of adolescents aged 13 to 15 years have a history of cigarette smoking, while 47.6% reside in households where others smoke in their presence. (WHO 2018) Communicable diseases are better controlled through the country's' strong vertical programmes for many of the priority communicable diseases, such as Human Immunodeficiency Virus (HIV), Tuberculosis (TB), Hepatitis and Malaria. (WHO 2018; 2015) Similarly maternal mortality ratio and under-5

mortality rate have been steadily declining for the last three decades (under 5 mortality rate reported at 27 deaths per 1000 live births in 2019) and immunization coverage remains high (approximately 95% among 1-year olds for the same period). (WHO 2018; MoHP et al. 2015; WHO 2015; CAPMAS 2021) It's worth noting however, that despite such progress, particularly in maternal and infant mortality, gaps remain in terms of levelling out such progress across the country, which is evident in the variations that continue to exist in terms of mortality rate per 1,000 live births across the nation (figure 3.1) with southern parts of the country experiencing significantly worse outcomes. (Burstein et al. 2019; CAPMAS 2021; WHO 2018)

Figure 3.1: Egypt mortality rate per 1,000 live births, 2000 and 2017

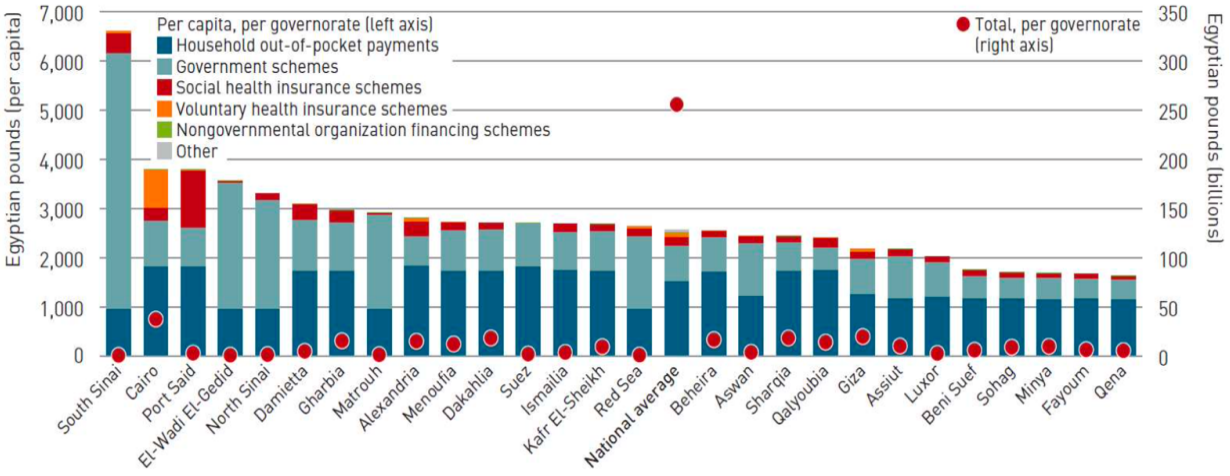


Source: Mapping 123 million neonatal, infant and child deaths between 2000 and 2017 (Burstein et al. 2019)

For the past two decades, notable advances in terms of health system strengthening and improvements in population health outcomes were achieved, the most significant of which were the attainment of the Millennium Development Goals (WHO 2015; Government of Egypt 2015; Rannan-Eliya et al. 2022; Awadalla et al. 2009), and the elimination of hepatitis C through diagnosing 87% of people living with hepatitis C and providing 93% of those diagnosed with curative treatment. (WHO-EMRO 2023) This has largely been made possible through strategic investment in the health sector, and consorted effort to improve the health system; according to the Ministry of Health and Population (MoHP) and international partners (MoHP et al. 2015; WHO 2018; Fasseeh et al. 2022), per capita health spending increased between 2005 and 2013 from US$ 66.6 to US$ 151.3, specifically, the proportion of general government funds allocated to health (from US$ 26.1 to US$ 61.5 for the same period) which clearly demonstrates the national investment in the sector. Despite these changes however, the proportion of total health spending

relative to the gross domestic product (GDP) remained constant at 5.1% over the same period, and out-of-pocket expenditures continued to be significant, accounting for a substantial 58% of overall health spending during the same time frame. The proportion of total and per capita health expenditure by governorate also remained inconsistent (figure 3.2) exacerbating the rural/urban differences mentioned earlier.

Figure 3.2: Total and per capita health expenditure by governorate and financing scheme 2015-2019



Source: National Health Accounts 2015-2019

Between 2005 and 2013, there was also a rise in health workforce density across various categories: the number of physicians increased from 24.3 to 28.3 per 10,000 population, nurses and midwives increased from 33.5 to 35.2 per 10,000 population, dentists increased from 3.4 to 4.2 per 10,000 population, and pharmaceutical personnel increased from 12.5 to 16.7 per 10,000 population, which shows consistency with regional changes in the health labour landscape for the same period. (WHO 2018; Fasseeh et al. 2022; CAPMAS 2021; Rannan-Eliya et al. 2022; World Bank Group 2023)

In 2014, Egypt adopted a new constitution which underscored health as a fundamental human right, and firmly expressed commitment to expand coverage and access to quality services for all Egyptians. (Government of Egypt 2015; WHO 2018) Ever since, achieving universal health coverage (UHC) and reducing out-of-pocket expenditure have been high on the political priority agenda, which catalysed substantial changes in the health systems' governance, regulation, and financing, (Government of Egypt 2015; Fasseeh et al. 2022; Oxford Business Group 2018b; 2018a) as well as modifications and transformations in the medical education and regulation landscapes. (Abdelaziz et al. 2018) These changes, modifications and transformations, which aim to bring

health and healthcare provision in line with global advancement, can be seen in the political efforts to realise UHC through the recently ratified Health Insurance law (Fasseeh et al. 2022; Rannan-Eliya et al. 2022; Devi 2018), the endorsement of the social health insurance framework (which is planned to ensure sustainable health system financial support and curtail out-of-pocket expenditure), the emphasis on health service delivery strengthening through a revitalization of the family health model (the country's' primary healthcare programme), as well as the radical restructuring of the undergraduate medical education programme from a discipline-based approach to a modular integrated curriculum (completed over 5 academic years and 2 years of internships, as opposed to the 6-year academic and 1-year internship program). (Abdelaziz et al. 2018; Nassar 2018; Nasser et al. 2021; Badrawi et al. 2023)

In charge of realising these plans are the country's newly established health and regulatory bodies which include the Universal Health Insurance Authority, the General Authority of Healthcare, the General Authority for Healthcare Accreditation and Regulation, and the Compulsory Egyptian Medical Training Authority which are expected to drive the implementation of the agenda articulated in Egypt's Sustainable Development Strategy Vision 2030 (Government of Egypt 2015) to prioritize the achievement of UHC and fulfil the commitment to health system strengthening and the ambitious agenda to transform the health sector outlook. (Government of Egypt 2015; Gericke et al. 2019; ElShafei 2018; Ismail 2018)

3.2 Medical education and regulation

Medical education and regulation in Egypt traces back to the 19th century which saw the establishment of national medical institutions to provide high-quality education to educate and train medical students, and national regulatory bodies which were conceived to lay the foundation for governance and regulatory mechanisms in the country. (Abdelaziz et al. 2018) 1827 saw the establishment of the first medical school in the country, Kasr Al-Ainy, which initially served as a military teaching hospital; this was followed 115 years later, in 1942 in Alexandria, by the second medical school, subsequently, the third medical school, Ain Shams, was founded in 1947. (Abdelaziz et al. 2018; Hosny et al. 2016; Abdalla and Suliman 2013) Further medical schools were then established, with many relying on the foundational faculties and curricula of these initial three institutions, adding up to, currently, nationwide, 27 public and private medical schools in operation in 20 governorates (table 3.1). Medical students who successfully complete their medical education and internship are awarded the Bachelor degree of Medicine and Surgery (M.B.B.Ch) (Abdelaziz et al. 2018) which automatically enables them to apply, and register for, a medical license. In 2019

however, a proposal was introduced for the establishment of the Egyptian Medical Licensing Exam (EMLE), which requires all medical graduates to undertake a national exam (100 multiple choice questions over three hours) prior to obtaining their medical license to practice. (MoHP 2022) It is expected that the EMLE will be rolled out in 2024. (Nasser et al. 2021)

Table 3.1 Medical school, Governorate and year of establishment

	Medical School (Governorate)	**Year established**
1	Cairo University Medical School – Kasr Al-Aini (Cairo)	1827
2	Alexandria University Medical School (Alexandria)	1942
3	Ain Shams University Medical School (Cairo)	1947
4	Assiut University Medical School (Assiut)	1960
5	Al Azhar University Medical School - for males (Cairo)	1961
6	Mansoura University Medical School (Mansoura)	1962
7	Tanta University Medical School (Tanta)	1962
8	Al Azhar University Medical School - for females (Cairo)	1964
9	Zagazig University Medical School (Zagazig)	1970
10	Benha University Medical School (Benha)	1978
11	Suez Canal University Medical School (Ismailia)	1978
12	Minia University Medical School (Minia)	1984
13	Menoufia University Medical School (Shebeen Elkoum)	1984
14	Al Azhar University Medical School - for males in Assiut (Assiut)	1984
15	Sohag University Medical School (Sohag)	1992
16	Beni Suef University Medical School (Beni Suef)	1996
17	Misr for Science & Technology University Medical School (6th October)	1996
18	October 6th University Medical School (6th October)	1996
19	Al Azhar University Medical School- for males in Damietta (Damietta)	2001
20	Fayoum University Medical School (Fayoum)	2005

	Medical School (Governorate)	Year established
21	South Valley University Medical School (Qena)	2006
22	Portsaid University Medical School (Portsaid)	2013
23	Aswan University Medical School (Aswan)	2013
24	Helwan University Medical School (Cairo)	2015
25	Kafrelsheikh University Medical School (Kafrelsheikh)	2015
26	Suez University Medical School (Suez)	2015
27	New Giza University Medical School (6th October)	2016

Source: Adapted from 'Medical Education in Egypt: Historical Background, Current Status, and Challenges' (Abdelaziz et al. 2018)

With the exception of Suez Canal University, up until 2017, most medical schools followed traditional didactic lecture-based teaching methods, which involved discipline-based curricula taught in large-groups, with only a handful of medical schools introducing a 'parallel track' alongside their traditional program, for a small number of students, to implement innovative teaching methods. (Badrawi et al. 2023; Abdelaziz et al. 2018) 2017 however saw a major shift in the structure of medical education, which was instigated by the Supreme Council of Egyptian Universities (SCU) who approved, and enforced, significant reforms effectively reducing the academic program from 6 years to 5 years, extending the internship period from 1 year to 2 years, and replacing the discipline-based curriculum with a modular integrated model. In parallel, new competency based National Academic Reference Standards (NARS-Medicine 2017) were introduced to complement and reinforce the integrated curriculum with early clinical exposure. (Badrawi et al. 2023; ElShafei 2018)

2017 also saw the formation of the Compulsory Egyptian Medical Training Authority Egyptian (CEMTA) (Official Archives-Egypt 2016) which was formally established by virtue of the decision of the Prime Minister No. 210 dated 31/1/2016 (MoHE Egypt 2022) with a mandate to lead the development and delivery of medical relicensure. CEMTA was replaced by the Egyptian Health Council (EHC) in 2022, which concurrently replaced the Higher Committee for Medical Specialties – the EHC retained both of these institutions' mandates to bring medical education, training and vocational oversight in further alignment. (Bassiouny and Elhadidy 2022; Badrawi et al. 2023) It's critical to note, that prior to the launch of CEMTA, and ever since, very little detail has been

published or articulated in the public sphere and/or by policy makers, particularly regarding the objectives and the process that medical relicensing in Egypt in expected to undertake. A national or wide-scale consultation prior to the decision made by the Prime minister also did not take place. It is particularly unclear how medical relicensing in Egypt will be linked to better performance of physicians, and the ways through which assessment using evidence, or theoretical frameworks, will inform the development of this large-scale policy intervention. It also remains unclear what the process of medical relicensing in Egypt will be, which and how healthcare organisations and individuals will be involved in undertaking this intervention, and what the plans are for the preparation and roll out.

Also central to medical regulation in Egypt are the Egyptian Medical Syndicate (EMS) and the Ministry of Health and Population (MoHP), who jointly oversee the registration and licensing processes for physicians. (De Vries et al. 2009) Established in 1940, the EMS is meant to play a central role in maintaining the standards and integrity of the medical profession in Egypt and acts as a bridge between healthcare professionals, the government, and the public to ensure that healthcare services are provided at the highest standards while safeguarding the rights and interests of doctors. (Abou Omar 2013; Gericke et al. 2019; De Vries et al. 2009) Membership of the EMS is a fundamental prerequisite for commencing a professional journey in the field of medicine, and only graduates from a medical school are eligible to join the syndicate. (Abou Omar 2013) On the other hand, the MoHP is the largest provider of primary, preventive, and therapeutic healthcare services across the country, with approximately a network of over 5,000 healthcare facilities across the nation. (WHO 2018) The MoHP operates across four distinct levels, each of which corresponds to a different tier of healthcare delivery. (Gericke et al. 2019; WHO 2018) The MoHP functions are delivered across these four distinct levels, which correspond to the following tiers of the healthcare system: central, health directorates (governorate level), health districts, and healthcare providers. At the governorate level, the MoHP manages the financing and procurement of healthcare, the district health structure essentially mirrors the function on the governorate level however operates on a smaller scale, while the healthcare provider level is divided based on the type of services provided and their geographical locations. (Gericke et al. 2019)

3.3 Primary health care and the family health model

Primary health care is delivered through the comprehensive network of public healthcare facilities which exists across the country. (WHO 2015) University hospitals, non-governmental organizations (NGOs), and military hospitals also provide primary care services. (The World Bank 2010; Gericke et al. 2019) In the public primary healthcare (PHC) facilities, consultations, basic

tests, and prescriptions, are offered free of charge, however the majority of patients (approximately 60%) prefer to either seek care in the private sector or directly consult secondary care specialists due to the limited range of service provision, and quality offered. (MoHP and WHO 2022; Rannan-Eliya et al. 2022; Awadalla et al. 2009; The World Bank 2010).

Established in 1999, as part of Egypt's health sector reform program strategies, Egypt's' Family Health Model (FHM) was developed as a comprehensive strategy for delivering primary healthcare services across the country with the objective of enhancing the provision of high-quality, integrated, family healthcare services to the whole population, and to consolidate the fragmented primary health care delivery system. (Farhat 2012; MoHP and WHO 2014) The model was designed to offer community-level primary care as a first point of care and provide a range of preventive and curative services bundled as the Basic Benefit Package (BBP), while also functioning as a gatekeeper for higher tiers of care via a referral system. Out of the 5,146 PHC facilities under the jurisdiction of the MoHP, approximately 3,147 actively implement the Family Health Model (FHM) offering an integrated services approach and expanding the scope of the services offered by the PHC facilities to include family planning, maternal and child health, the Expanded Program on Immunization (EPI), and the Integrated Management of Childhood Illnesses (IMCI). (Gericke et al. 2019; Kader 2013; Khalil, Elshazly, and Tolba 2017; Awadalla et al. 2009; MoHP and WHO Egypt 2014; MoHP et al. 2015) Through the FHM, family physicians and nurses also receive training which allows them to assess, diagnose, treat, and refer. (Farhat 2012; WHO 2018)

According to a recent assessment led by the MoHP and the WHO (MoHP and WHO 2014), several challenges were identified which hinder progress in terms of the FHM operational performance and its ability to achieve its intended objectives, the most notable of which are 1) The fragmentation within institutional and regulatory frameworks, and 2) The difficulties in ensuring a well-equipped, well-educated, trained, fairly compensated, and motivated health workforce within family health facilities. Further challenges also exist, particularly those related to information management, such as the fragmentation and duplication of facility records, limited automation, and deficient sharing and utilization of information resources.

3.4 Family medicine

Family medicine as a medical speciality is undervalued and understaffed in Egypt. (Soliman 2019; Gericke et al. 2019; Farhat 2012; Mowafy, Kamal Elden, and Hegazy 2022; AlKot et al. 2015; Kader 2013; Awadalla et al. 2009; MoHP and WHO Egypt 2014) Exposure to family medicine

throughout undergraduate medical studies is limited, with only minimal number of medical undergraduates aspiring to pursue the speciality; in a survey conducted in 2015, only 4.7% of medical students from seven Egyptian medical schools expressed interest and/or intention to choose family medicine as a future career. (AlKot et al. 2015) Out of that small pool of medical graduates who pursue speciality training in family medicine, approximately 86% intend to emigrate following qualification. (Soliman 2019) This is mostly due to the low public salaries and the challenging working conditions family physicians often face in poorly resourced PHCs; a typical workday involves seeing 30 to 40 patients in the public sector, which is extended with engagement in private practice during the afternoons, or on other days of the week, at polyclinics or private hospitals to supplement income. (The World Bank 2010; Soliman 2019; Ismail 2018; AlKot et al. 2015)

The national family medicine residency program necessitates three years of service in a PHC unit under supervision, involving limited training in a university hospital, hospital rotations, participation in family medicine clinics, and the completion of a Masters' degree that designates them as family medicine specialists. (Soliman 2019; Mowafy, Kamal Elden, and Hegazy 2022) A parallel path exits, the Egyptian Fellowship Board (EFB), introduced in 1998, which also qualifies graduates as family medicine specialists. (Farhat 2012) The difference between both tracks is the length of training and the overseas recognition of the award; the EFB designation is more distinctly recognized, making those specialists highly sought after by employers particularly in the Middle East and Gulf region. (AlKot et al. 2015; Soliman 2019) Trainees on the EFB program undergo rotations in PHCs designated for training and hospital posts over a four-year period; each training PHC unit caters to a population of over 20,000 and accommodates several trainees and trainers whereby each trainee is assigned a designated trainer throughout the program. (Soliman 2019; Mowafy, Kamal Elden, and Hegazy 2022) Those on the EFB program undergo weekly teaching and scientific sessions in the PHC units, bringing together trainees from various PHC units and hospital posts; they're also required to undertake workplace-based assessments, written and clinical exams (which were codeveloped with the Royal College of General Practitioners International who accredited the Fellowship qualification for MRCGP International in 2009), and are required to submit a dissertation in their final year. (Soliman 2019)

Under the ongoing health system reforms, (Government of Egypt 2015) primary care is expected to play a pivotal role as one of the main vehicles to realise UHC given that healthcare coverage is expected to be expanded to include the 50% of uninsured Egyptians, and the 30% of those unable to pay annual insurance subscriptions. (Government of Egypt 2015; Oxford Business Group

2018b; Fasseeh et al. 2022; MoHP and WHO 2022) Furthermore, gatekeeping will be more rigorously enforced whereby to consult secondary care specialists, patients will need referrals from primary care physicians. (Soliman 2019; Mowafy, Kamal Elden, and Hegazy 2022) This is expected to require a substantially large number of family medicine specialists and trainers who will be at the forefront of this sea change in health service delivery.

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In this chapter I provided an overview of the health system configuration in Egypt and the medical regulatory and medical educational landscapes embedded within it. I also examined the health system governance, policy changes, and reforms and disentangled the backdrop within which the policy intervention of focus for this thesis (i.e.: medical relicensing) is expected to operate within. I also shed light on primary care as an area of focus and discussed evolutionary changes for this field within the Egyptian health care system. In the next chapter I outline the research philosophy that underpins my research, explain my ontological, epistemological, and axiological approaches, and justify my research methodology. I also examine the parameters, paradigms, and the purpose I confer to my methodological approach of choice (the realist approach) and explain its alignment with the contribution my research inquiry aims to make in terms of producing context-specific and context-sensitive considerations for the way forward for the Egyptian medical relicensing endeavour.

CHAPTER 4: METHODOLOGY

4.1 Introduction

Methodology refers to the theoretical assumptions and principles used to underpin the research approach. (Giddings and Grant 2006) It could be considered the compass that guides how research questions can be answered and gives direction in terms of what instruments (methods) can be used to answer them.

The choice of research methodology is informed by one's research philosophy and the paradigms within which it is situated. (Creswell 2009; Saunders et al.,2015) A paradigm can be defined as an overarching philosophical or ideological position which underpins how we, as researchers, go about producing knowledge. (Broom and Willis 2007) A researchers' paradigm therefore reflects their beliefs and assumptions about what reality is, or the way the world is (ontology), their understanding of what constitutes as knowledge, or how knowledge is possible (epistemology), and the values they are guided by (axiology). (Creswell 2009; Sousa 2010) I examine each of these approaches in relation to my inquiry in this chapter.

In the context of health and healthcare research, researchers' paradigmatic positions vary greatly, from interpretivist (whereby the premise is that knowledge is socially constructed, and that reality is ultimately subjective), to positivist (where the underlying belief is that reality is fixed and that rigorous methodology is the way to produce objective knowledge), and everything in between. (Broom and Willis 2007; Roberts et al. 2006) These paradigms are derived from philosophical theories, which ultimately, and inherently, influence how evidence is collected, analysed, interpreted, and utilised. Table 4.1 summarises from the literature the ontological epistemological, methodological variations, and their related research methods for the five major philosophical paradigms used in health and healthcare research: positivism, interpretivism, critical realism, postmodernism and pragmatism (Bhaskar 1978; Broom and Willis 2007; Creswell 2009; Guba and Licoln 1994; Guba 1990; Kaushik and Walsh 2019; Mirza et al. 2014; Pansiri 2006; Pawson and Tilley 1997; Saunders et al. 2015; Sousa 2010; Weaver and Olson 2006)

Table 4.1: Variations across the five major philosophical paradigms used in health and healthcare research: positivism, interpretivism, critical realism, postmodernism and pragmatism

Philosophical theory	**Approach**	**Ontology** *(What is reality?)*	**Epistemology** *(What constitutes as knowledge?)*	**Methodology** *(Assumptions that underpin the research approach)*	**Method** *(Tools to generate knowledge)*
Positivism	Deductive	Truth is objective and reality is fixed and static	Knowledge is objective and is acquired through experience of the world and our interaction with it and claims are testable through observation or experiment.	Prediction and control should be used to develop generalisable assumptions which can describe and predict patterns	Quantitative methods (for example: statistical testing of hypotheses such as e.g. randomised controlled trials, questionnaires …etc)
Interpretivism	Inductive	Truth is subjective and there is no single ultimate reality	Knowledge is subjective and can be acquired in a number of different ways.	Assumes that knowledge is subjective and so meaning is constructed in the researcher–participant interaction in the natural environment.	Qualitative methods (for example: ethnography, interviews…etc)
Critical realism	Abductive/ Retroductive	Truth exists independently of our perceptions, and constructions (Realist)	Knowledge is constructed from our own perspectives (Constructivist)	Assumes that knowledge is derived from underlying causes and mechanisms embedded in the reality of the natural order of the world	Quantitative and/ or qualitative
Postmodernism	Abductive	Truth is not absolute; it is contingent on the individuals'	Knowledge is subjective and is influenced by individuals' political, social, and ideological predispositions.	Assumes that knowledge is subject to change and progress over time, both on collective and	Qualitative

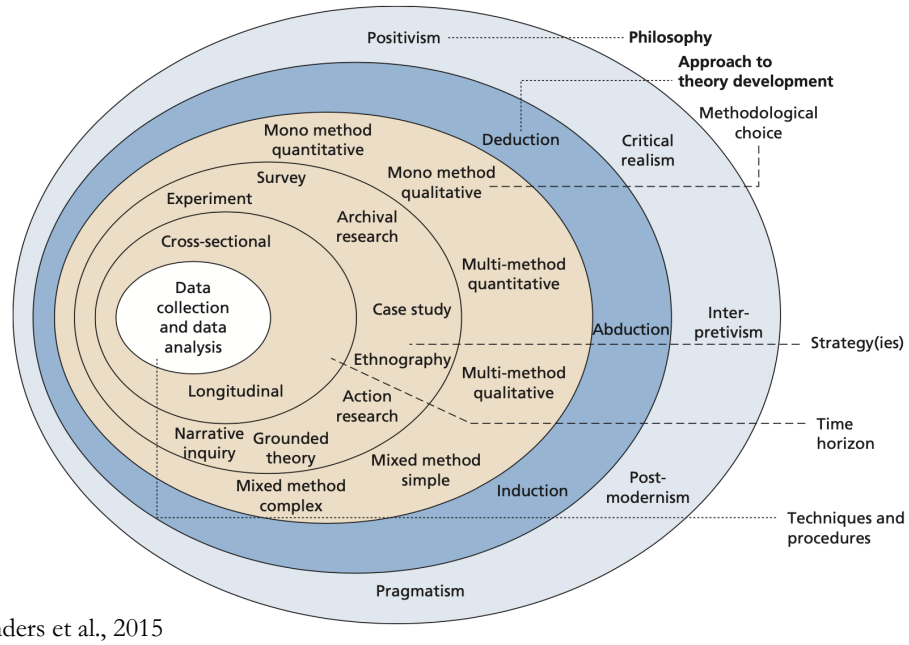
		interpretation of the world		individual levels	
Pragmastism	Abductive	Truth is dynamic and ever-changing as it is based the individuals' changeable experiences	Knowledge is subjective and is geared toward solving practical problems	Assumes that reality is not determined once and for all, but rather as a normative concept (i.e.: reality is 'what works')	Quantitative and/ or qualitative

Source: Author

4.2 Research Philosophy

According to Saunders et al (Saunders et al. 2015) a research philosophy is the set of beliefs and assumptions that underpin knowledge development. This means that to have a credible research philosophy one must have a thoroughly thought through, and consistent, set of assumptions which will support one's methodological choice, research strategy, instruments to generate knowledge (techniques and procedures) and untimely data collection. As seen in figure 4.1 all these parameters are layered and interlinked, ultimately influencing the direction of travel of any research.

Figure 4.1 The research onion



Source: Saunders et al., 2015

The research philosophy underpinning my research inquiry is that of Critical realism. As a relatively new paradigm, critical realism positions itself as a philosophy somewhere between positivism and interpretivism. (Bhaskar 1978; Sayer 2000) In critical realism, reality exists independent on how we view it, or our own thoughts about it, however it also takes into account the value of observation, and claims that although observing may create more confidence about what exists, existence itself is not dependent on observation. (Bhaskar 1978; Guba 1990; Haigh et al. 2019; Sayer 2000) It [Critical realism] recognises that our knowledge is transitive, and that for us to understand, and therefore contribute to the transformation of the social world, we need to recognise and appreciate the actors and entities that generate those events and discourses. (Yucel 2018) In this approach, scientific theories are both the outputs of investigations and the inputs of further investigations in a developing manner.

According to critical realism, reality is segmented into three domains: real, actual, and empirical. In the 'real' domain actors or entities have the power to activate mechanisms that can affect other actors or entities (for example: causal mechanisms); the 'actual' domain is made up of events and their effects which result from the activation of causal mechanisms; and the 'empirical' domain represents observed actual effects of the aforementioned events. (Haigh et al. 2019) In light of that, human agency becomes quite central to producing transformations, which was described by Baskar, the originator of the philosophy of critical realism and metaReality, as: "[Agency] quite an important concept in realist philosophy…. Mind is an emergent power over matter, and reasons are causally efficacious in producing actions" (Faculti 2014) These philosophical roots have given rise to several variations in this approach, such as the body of work by Pawson and Tilly (Pawson and Tilley 1997) in the fields of realist evaluation, evidenced based policy, and the evaluation of complex interventions. (Pawson et al. 2005a)

The realist approach is anchored to the philosophical theorising of Roy Baskar and Margret Archer (Archer 1998; Bhaskar 1978), however aligns itself more to realism as an empirical method. (de Souza, 2013) This can be seen in where the primary focus in the realist approach lies, which is on the 'context', 'mechanism' and 'outcome' configuration (CMO-C); a core feature of realist program theory development and refinement. (Pawson and Tilley 1997) Here, 'context' refers to specific aspects of context that affect if, and how, change can influence the achievement of outcomes, and 'mechanism' refers to the underlying processes that cause an outcome. (Pawson et al. 2004) Causal mechanisms that underlie types of interventions aim to unpack, and provide explanations, across interventions which share similar underlying theories of change as to why they work (or not) for particular groups in particular contexts. (Pawson 2006; Pawson et al. 2004; Wong et al. 2013b)

This approach, undertaken using the realist method, therefore allows for reflective and insightful investigation of what works, how, for whom, to what extent, and in what circumstances, which is paramount to producing locally relevant evidence to inform policy direction. (Pawson 2006; Pawson et al. 2005b, 2004; Pawson and Tilley 1997)

This philosophical and practical underpinning of the realist approach means that thorough and pragmatic understanding of complex interventions, how they work and for whom, is at the heart of this method of inquiry. Unlike other approaches which place more emphasis on quantifying and documenting overall program and/or intervention effectiveness, which frequently offers limited insights into the underlying reasons for their success or failure, especially when applied in diverse contexts with different stakeholders, the insights generated using the realist approach through the CMO-C and the realist program theory development and refinement is significantly more valuable to policymakers when strategizing and executing programs at various levels, be it local, regional, or national. This is well aligned with the contribution my research inquiry aims to make in terms producing locally relevant evidence for the Egyptian context and to the coproduction of a medical relicensing framework that contributes to positively impacting physicians' performance in Egypt. Further detail on the realist approach and how it has been adapted to be used for my research is explained in detail in section 4.7 of this chapter.

4.3 Ontological approach

Realists and critical realism share a realist ontology which is concerned with the nature of causation, agency, actors, entities, relations, and the implicit as well as explicit realities within which they operate. (Archer 1995; Archer et al. 2013) In the same vein, ontological realism claims that reality exists independently of our perceptions, and constructions, and so cannot be fully informed by an empirical approach or hermeneutical examination to generate understanding. Instead, our understanding should be guided by our experiences which is enhanced by backward reasoning (i.e.: retroduction) that unpacks these experiences to the underlying realities that may have contributed to causing them. (Ackroyd and Fleetwood 2000; Archer and Archer 1995; Bhaskar 1978)

4.4 Epistemological approach

Referred to as the theory of knowledge, epistemology encompasses the nature and origin of knowledge (Stroll and Martinich 2021), and in the context of research refers to what constitutes as knowledge, or how knowledge is possible. Taking into consideration the following two notions: 1) That the interactions, relationships, and networks physicians have with governance and

regulation are certainly complex in nature and situated in the real world, and 2) Guided by the assumption put forward by the realist school of thought that institutions in health and healthcare can be viewed as micro-scaled versions of society, my epistemological approach therefore takes into account that knowledge is derived from underlying causes and mechanisms embedded in the reality of the natural order of the world, that is to say that truth exists independently of our perceptions, and constructions (Realist), however it can be further developed by knowledge constructed from our own perspectives (Constructivist).

4.5 Axiological approach

Axiology refers to the study of value. (Marcum 2008) Value can refer to the values one has as a researcher, or the value one finds in research, but it can also be about the value one aims for in terms of the research contribution to the world in respect to how and why various realities matter. The value conferred to this work is underpinned by the principal notion that well-informed regulatory policies and governance mechanisms have the capacity to enhance health workforce performance, enrich the clinical experience for both physicians and patients, and ultimately improve health outcomes and strengthen health systems. It is my view that through such a progressive approach to performance improvement that quality of care can advance.

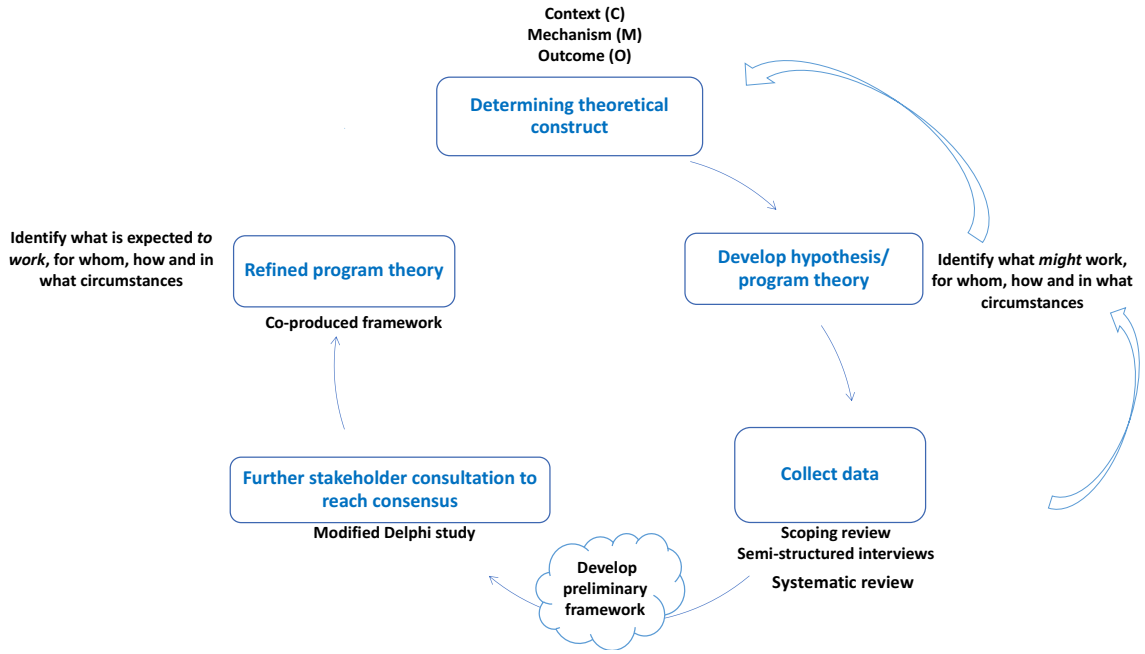
4.6 Methodological approach

In order to unpack what works, how, for whom, to what extent, and in what circumstances, I have adopted a realist informed methodological approach and research design. This is an inherently flexible and iterative approach which enabled me to elicit information aligned with the exploratory and multifaced nature of my query (figure 4.2). A flexible and iterative approach provides an opportunity for multiple and mixed method to be utilised to collect and analyse data.

At the heart of my methodological design is the pursuit of reliable and valid results which I've strived to achieve through rigorous research processes, exhaustive planning, and transparent reporting. As discussed, and reasoned, in section 4.2 in this chapter, a realist philosophy was used to underpin the approach for my research inquiry. Realist approaches, to date, have primarily been used to review evidence, and/ or evaluate complex interventions that have already been implemented as a theory-orientated and explanatory approach to evidence synthesis. A key consideration in my research study is that medical relicensing in Egypt is yet to take effect and so the evidence on whether it works in the Egyptian context does not yet exist. Therefore, my methodological approach was adapted to accommodate the prospective assumptive nature of the

knowledge generated, and the predictive likelihood of its impact. The main adaptation here is that the principles of the realist approach, primarily its theory driven features, which includes the initial program theory development and refinement, was extrapolated from existing literature on similar regulatory interventions globally, while its [realist approach] exploratory techniques, which includes delineating the key functions, strategies and activities of an intervention, and its intended, and unintended, outcomes through a generative approach to causation have been elicited, mapped out and modified for the Egyptian context. The methods I used to carry out my work and realise this approach is explained in further detail in the next sections in this chapter.

Figure 4.2: Schematic representation of my methodological approach using a realist informed design



Source: Author

4.7 The Realist approach

The realist approach is a theory driven approach, increasingly used by practitioners, policy makers and academics alike to evaluate complex health interventions. (Byng et al. 2005; Fletcher et al. 2016; Gilmore et al. 2019; Ranmuthugala et al. 2011; Wong et al. 2013b) Considered to be a practical approach to develop policy relevant findings, the realist approach recognizes the importance, and the influence, contextual factors and mechanisms of change have on health interventions. It thus adopts a theory-orientated, as well as explanatory approach, to evidence synthesis. (Brennan et al. 2017)

The realist approach has been identified as a way by which researchers can "…. seek to explain generative causation within the social world by identifying particular patterns of interactions." (Gilmore et al. 2019). As such, the hallmark of this approach is the development, and refinement, of a program theory -- described by Pawson and his team as an 'abstracted description' -- which can be represented diagrammatically, delineating the key functions, strategies or activities of an intervention, the intended outcomes of the intervention and the mechanisms that contribute to particular outcomes. (Pawson et al. 2016; Wong et al. 2013a) Evidence synthesis using the realist logic takes a generative approach to causation: "to infer a causal outcome (O) between two events (x and y), one needs to understand the underlying mechanism (M) that connects them and the context (C) in which the relationship occurs" (Kastner et al. 2011; Pawson et al. 2016; Wong et al. 2013a), and the context-mechanism-outcome configuration is quite central in realist theory building and the refinement process in this approach. (Gilmore et al. 2019; Pawson and Tilley 1997)

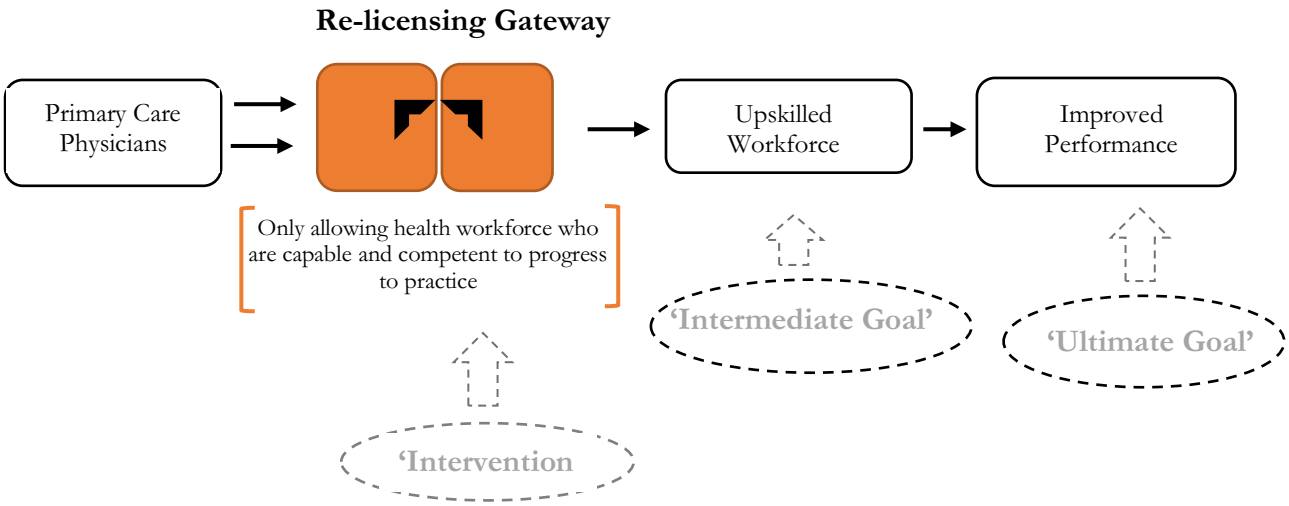
4.7.1 Theory in the Realist approach

Using a realist approach to answer a research inquiry, one begins with an initial program theory (Centre for Social Action Innovation Fund 2012; Funnell and Rogers 2011) and ends with a revised, more refined program theory. Program theory is about what the intervention is expected to do, and the theory behind how it is expected to work. (Wong et al. 2013b) This typically would include description of the 'intervention', the 'intermediate outcomes' generated, and the 'ultimate goal' expected to be achieved, as seen in figure 4.3. The hallmark of the realist approach is in unpacking this further to include & distinguish the 'context', 'mechanism' and 'outcome' and the interactions between them which influences the entire process. I used this generative theory rationale from the outset in planning my research, to support the systematic development of the program theory and research findings.

Drawn from the synthesis of the scoping review on medical relicensure (chapter six), and the systematic review on health workforce performance (chapter seven), I developed preliminary assumptions and theories to inform the development of my program theory and map out the CMO-C which are distilled in figures 4.3 and 4.4. As seen in figure 4.3, medical relicensing can be theorised to be a regulatory gateway (an intervention) whereby physicians who are capable of safe and competent practice go through. Passage through such a gateway should, in theory, instigate upskilling of the health workforce (intermediate goal) which subsequently results in an improvement in their performance (ultimate goal). The end game here is to work towards better

health outcomes for the population by investing in one of the core health systems building blocks (human-resources-for health) through education, training and more rigorous governance procedures. (WHO 2016)

Figure 4.3: Initial program theory



Source: Author

Please note while this is portrayed in a linear fashion, it's important to highlight that, in reality, these links operate in a nonlinear manner depending on the context within which they are situated.

4.7.2 Realist paradigms

The realist paradigm is a situational one, which primarily seeks to explain outcomes and actions produced by complex programs and interventions. In contrast to focusing on measuring and reporting the effectiveness of programs and interventions, which often provides limited information in terms of why said program or intervention worked, or not, particularly when replicated in different contexts or circumstances which often involve different stakeholders, the realist paradigm offers a comprehensive and practical understanding of complex interventions which is likely to be of much more use to policy makers when planning and implementing programs at local, regional or national levels. (Pawson et al. 2005c)

More than anything else, what the realist paradigm offers is structurally cohesive explanations that can meaningfully support evidence informed decision making which draws on the practical realities and challenges involved in dealing with complex social interventions. These structurally cohesive explanations emerge from the exhaustive realist perspective's views of complexity, and the number of different factors considered that underpin it (Pawson 2013), these include:

1. Volition: People make different choices, and these choices vary based on a plethora of factors.
2. Implementation: Interventions and programs have lengthy implementation cycles which are often marked by fluctuation and change.
3. Context: Underlying circumstances which can have both micro and macro scopes.
4. Outcomes: Outcomes are appreciated on a more granular basis as indented, unintended, intermediate, ultimate…etc.
5. Time: The history behind how the intervention or program came about and the influence of that evolutionary process on how the intervention and/or program.
6. Rivalry: Interaction, if any, with existing interventions or programs.
7. Emergence: Things changing over time.

4.7.3 Realist causation: Preliminary context-mechanism-outcome configuration

Medical relicensure as an intervention, does not operate in a vacuum; it influences, and is influenced by, the environment it operates in. In the same vein, the process of relicensing, similarly to other forms of health regulation, is not linear, it's embedded in social systems prone to modification and change through learning. The setting within which relicensure operates therefore includes how it is enforced, the policy environment within which it is situated, attitude of the public and doctors, amongst other factors which are discussed in further detail in chapter six. Applying a realist informed generative explanation for causation to the Egyptian medical relicensing proposition would therefore be construed as follows: an outcome (O) of interest (in this case improved performance) triggered by relevant mechanism(s) (M), being situated in various contexts (C). In other words, to infer a causal outcome (O), one needs to understand the underlying mechanism (M) that connects them and the context(s) (C) in which the relationship occurs. (Pawson et al. 2004; Wong et al. 2013b).

As mentioned previously, the object of the CMO-C is that it provides causal explanations that in turn provide the basis of our knowledge claim. Through the interaction and the linkage in a configuration, the three concepts of context, mechanism, outcome can offer a coherent and intelligible causal explanation. (Pawson 2006; Pawson et al. 2005c; Wong et al. 2013a) Here, I break down the various elements comprising context, mechanisms and outcomes as described in the realist approach in further detail. (Pawson 2013, 2006; Pawson et al. 2005c, 2004; Pawson and Tilley 1997)

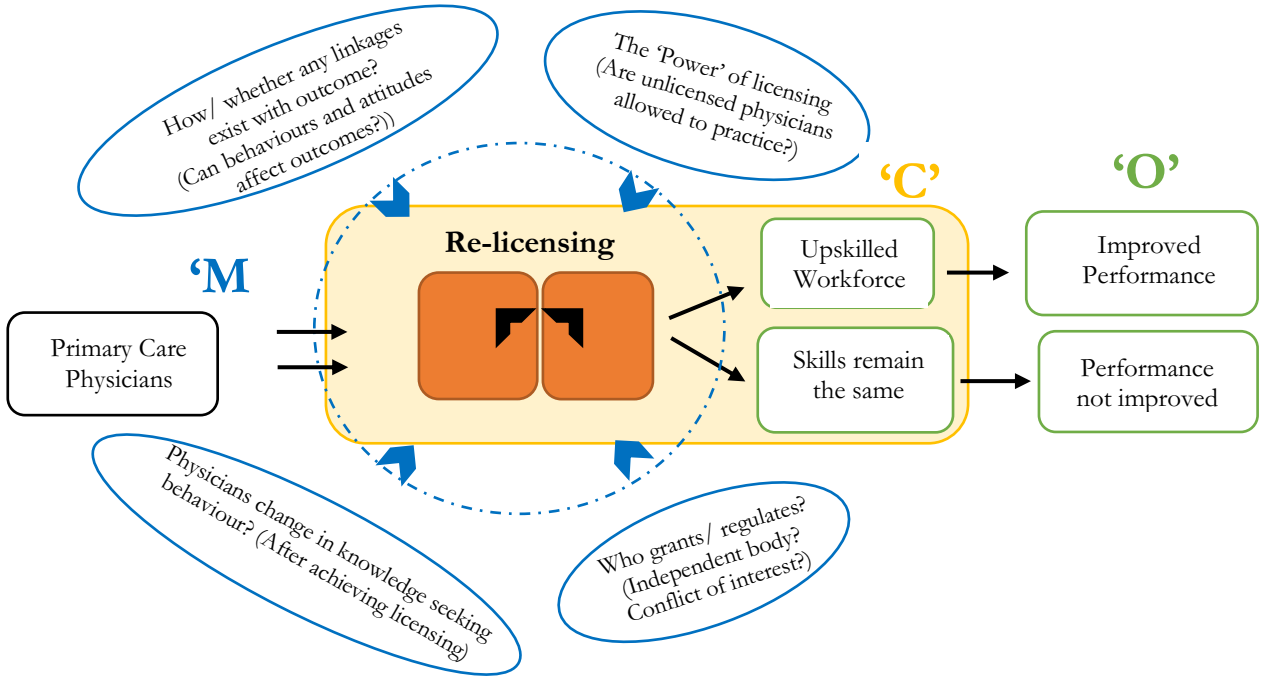
Context(s): Describe pre-existing features, or circumstances, in which an intervention, or program, is introduced that shape how the intervention or program operates. Contexts are commonly dynamic, multiple, relational, and layered.

Mechanism(s): Describe what it is about an intervention or program that produces any effects. Mechanisms are commonly hidden, interpreted in different ways by different people, triggering different causal mechanisms which in turn create different causal pathways.

Outcome(s): The realism approach does not offer a single outcome measure to conclude whether a particular intervention works or not, nor does it deliver a pass/fail verdict. It tries to explain the whole footprint of outcomes which are always multiple and varied in their effect (indented, unintended, intermediate, ultimate, immediate, delayed…etc.), will work for some and not for others, work here but not there.

In the scope of my research, and drawn from the synthesis of the literature discussed thus far, my initial CMO-C, as illustrated in figure 4.4, is ascertained to be:

Figure 4.4: Initial CMO-C



Source: Author

Context: The background features or circumstances that shape the mechanisms through which medical relicensing (the intervention) works.

Mechanisms: The processes that describe how relicensing produces change by explaining its impact on the physicians reasoning and their choices.

Outcome: The mixed pattern of outcome consisting of both intended and unintended consequences.

The evolution and further development of the CMO-C based on the findings from my empirical studies is discussed in detail in chapter six and seven.

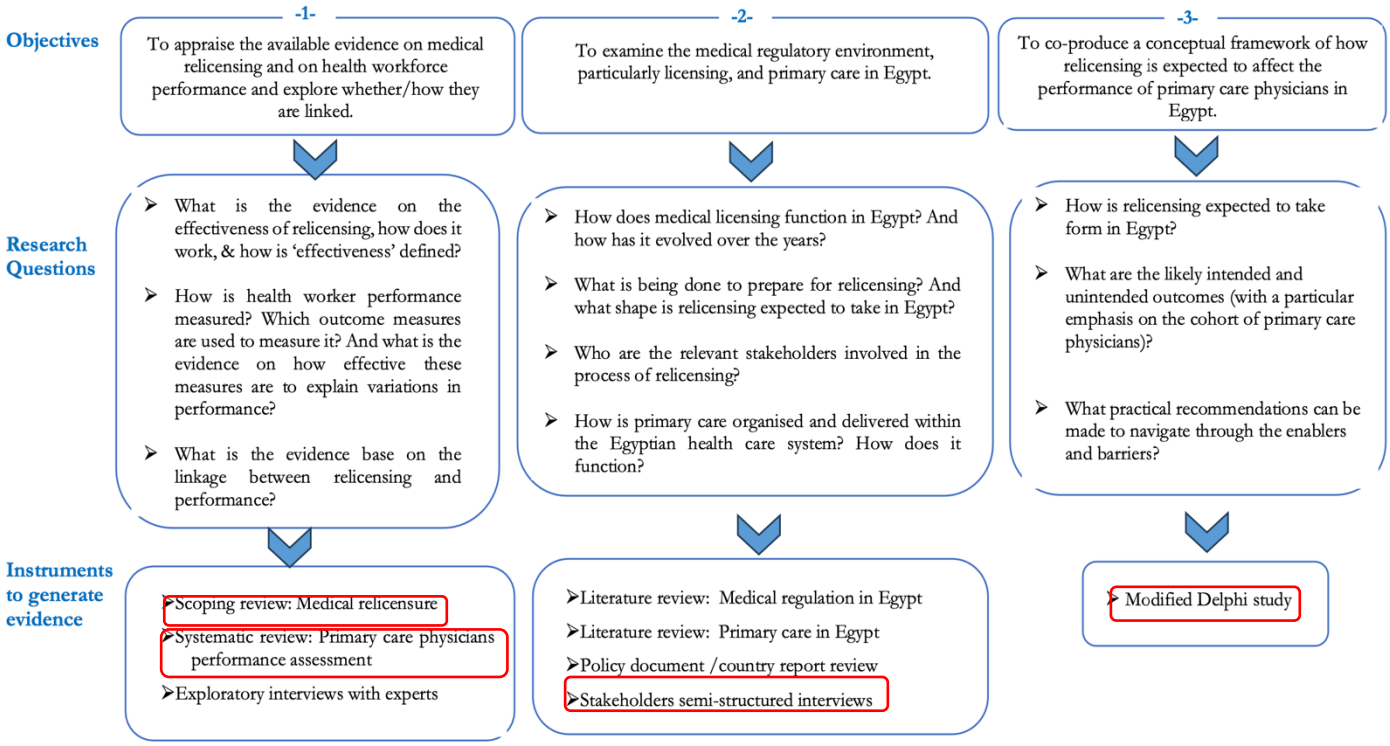
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In this chapter I outlined the research philosophy that underpins my research, explained my ontological, epistemological, and axiological approaches, and justified my research methodology. I also examined the parameters, paradigms, and the purpose I confer to my methodological approach of choice (the realist approach) and explained its alignment with the contribution my research inquiry aims to make in terms of producing context-specific and context-sensitive considerations for the way forward for the Egyptian medical relicensing endeavour. In the next chapter I discuss in detail the methods I used to collect and synthesise data and specifically elaborate on the methods for the four principal empirical studies in this thesis, which are the scoping review on medical re-licensure, systematic review on health workforce performance, semi structured interviews, and modified Delphi study. Each of the four studies are discussed in the next chapter in terms of the rationale for choice, design, approach, and the steps undertaken to complete them.

CHAPTER 5: METHODS

The four principal empirical studies in this thesis, as outlined in figure 5.1 below in red, are: 1) Scoping review: Medical re-licensure (the results for which are discussed in Chapter six), 2) Systematic review: Health workforce performance (the results for which are discussed in Chapter seven), 3) Semi structured interviews (the results for which are discussed in Chapter eight), and 4) Modified Delphi study (the results of which are discussed in Chapter nine). Each of the four studies are discussed in this chapter in terms of the rationale for choice, design, approach, and the steps undertaken to complete them.

Figure 5.1: PhD research design roadmap: Principal studies highlighted



Source: Author

5.1 Scoping review: Medical re-licensure

5.1.1 Introduction

Many types of literature reviews exist, each with a particular function and focus. (Grant and Booth 2009) Scoping reviews are relatively new types of primary research reviews, which are predominantly used for 'reconnaissance', i.e.: to explore and clarify working definitions, and to describe and ascertain conceptual boundaries within a particular topic or field. (Peters et al. 2015; Arksey and O 'Malley 2005) Scoping reviews are a particularly valuable method to use to explore

heterogeneous literature that are complex in nature and not-yet comprehensively reviewed. Scoping reviews are therefore the preferred choice of method to map out key concepts within a body of literature to identify gaps in research, appraise emerging evidence, and examine the extent, range and nature of research that underpin an area of study. (Cacchione 2016; Peters et al. 2015; Arksey and O 'Malley 2005; Davis, Drey, and Gould 2009)

Scoping reviews can be utilised as a precursor for systematic reviews, to identify their scope and focus, and to answer a specific question, or series of questions. Scoping reviews can also be undertaken in and of themselves to summarise literature, identify gaps within a particular research area, as well as make recommendations for future research and practice. (Peters et al. 2015; Arksey and O 'Malley 2005; Levac, Colquhoun, and O'Brien 2010) The framework for scoping reviews was first published by Hilary Arksey and Lisa O'Malley in 2005 which, for the first time, made the distinction between different types of scoping studies and identified how, and where, these differ from other reviews. (Arksey and O 'Malley 2005)

5.1.2 Reasoning for method selection

As outlined in more detail in chapter two, the past 20 years has seen an emergence of a variety of validation systems across the world (Horsley et al. 2016), all of which are essentially trying to achieve the same purpose of keeping track of, officially documenting, and in some cases improving, health workers fitness to practice. Within this fairly new territory of physician validation systems, evidence-based approaches for implementation are scarce, and so, unsurprisingly, various methods to validate physicians' performance can be found across health systems. These broad variations in the approaches used to attempt to quantify health workers fitness to practice across health systems can be found in the literature (Pringle 2006; Hawkes 2012; Teirstein 2015; Horsley et al. 2016), and these vary from continuing medical education approaches (for example: providing evidence for attending educational activities and events), to audits, and gathering performance related data. There's also variability in the names and definitions used to describe these national validation systems, ranging from renewal of licence (relicensing), revalidation, and recertification, each aiming to achieve a slightly different objective. A scoping review to explore the heterogeneous and complex literature on relicensing is therefore the best approach to map out key concepts within the existing body of research to identify gaps, appraise emerging evidence, and examine the extent, range and nature of research that underpin this area of study.

5.1.3 The scoping review process

The scoping review process involves five key stages of development which include: 1) Identifying the research questions, 2) Identifying the relevant studies, 3) Study selection, 4) Charting the data, and 5) Collating and summarising the results. (Arksey and O 'Malley 2005; Davis, Drey, and Gould 2009) Stages one and two are similar to those undertaken in more traditional reviews, such as systematic reviews, while stages three, four and five include unique aspects that are more characteristic to scoping reviews, distinguishing them from other types of review approaches.

Stage 1: Identifying the research question

The starting point of a scoping review is to identify the research question. This determines the parameters of the research and guides the development of the search strategies. For this scoping review, the main research question was: what is medical relicensing? This question was then unpacked further to specifically ask: what is the body of evidence around how relicensing and variations of it work? where has it been implemented? and in what way has it produced its effects?

Stage 2: Identifying relevant studies

To comprehensively identify studies and reviews relevant to the research question established in stage one, multiple techniques and diverse sources are used to search for relevant literature, for example: electronic databases, hand searching of key journals and publications, reference lists search, data and evidence from relevant organizations, networks of researchers and experts in this discipline. As expected, given the wide net that is cast in this kind of review, the search usually generates thousands of bibliographic references which are then appraised to explore whether they are deemed relevant to be included in the final study selection. Bibliographic software packages are therefore useful to use to facilitate this process and is an invaluable resource for keeping track of records and managing the volume of references. In this study the electronic databases MEDLINE, EMBASE, Global Health, ERIC, Scopus, Cochrane Library as well as Google scholar were searched as well as hand searching of key journals, seminal publications, and reference lists. Endnote x10 bibliographic software package (The EndNote Team 2020) was used to manage the records and filter through citations and full texts.

Stage 3: Study Selection

In stage two, breadth rather than depth is the objective, however in this stage the main purpose is to hone-in on relevant literature and eliminate studies that are not relevant to the central research question. Unlike the approach used in systematic reviews, the inclusion and exclusion criteria for

study selection in a scoping review is developed post hoc which is made possible by the growing familiarity with the literature that has taken place in the process of undertaking the preceding two stages. The identified inclusion and exclusion criteria are then used as a benchmark against which all the citations are compared to determine their relevance. Once relevant titles and abstracts are identified and appropriately categorised, the next stage requires reading through full articles to decide whether they should be included in the review.

Stage 4: Charting the Data

'Charting' was described by H. Arksey and L. O'Malley as a technique to sift and sort material according to key issues and themes (Arksey and O'Malley 2005); a term they borrowed from approaches used to synthesize and interpret qualitative data. (Ritchie and Spenser 1994) Unlike the process undertaken in systematic reviews, whereby data is 'extracted', the charting process in a scoping review is more aligned with what's utilised in narrative reviews (Pawson 2002) which is more contextual in nature, taking into account a broader view to include aspects of the process as well as the outcome, and is therefore descriptively analytical in nature. (Arksey and O 'Malley 2005)

In charting the data for this scoping review, reports were included for analysis if they described a national-level medical licensing or relicensing programme or system and/or reported relevant information (i.e.: purpose of the programme or system, etc). Charted data included a mixture of general information about the study and its characteristics (for example: authors, study design, study population, intervention type, and outcome measures) as well as specific detail about the studies (for example: information relevant to the context or the process of the intervention and the mechanisms at play affecting the outcomes). Analysis was undertaken using a critical interpretivist approach (Dixon-Woods et al. 2006; Depraetere et al. 2021) due to its explicit orientation towards theory building, it's iterative and dynamic approach to selection of data and its critical scrutiny in questioning the underlying assumptions of the literature which closely aligns with the running realist informed methodological thread anchoring the development and refinement of the preliminary programme theory. Critical interpretive analysis engenders dynamic, recursive, and reflexive critique of the literature, which forms an integral part of the synthesis, and plays a key role in theory generation. (Dixon-Woods et al. 2006) Data was then synthesised and summarised as explained in stage five.

Stage 5: Collating and summarising the results

It is in the very nature of scoping reviews to describe and ascertain conceptual boundaries within a particular topic or field, and to present an overview of the knowledge within that field. (Arksey and O'Malley 2005) This is reflected in the way the often-large body of data is collated, summarised, and reported. In contrast to the process undertaken in a systematic review, a scoping study does not seek to filter through studies according to their 'quality', assess or present the 'weight' of evidence or aggregate data, in order to determine generalisability of the findings for example, but rather, at this stage, having charted information from studies, data is summarised and presented in the form of a narrative account, which is usually underpinned by an analytic framework or follows a thematic construction. In this study the data was summarised thematically, and results were presented both numerically (for example: the distribution, extent, and nature of the included studies), as well as thematically, guided by The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al. 2018)

5.1.4 Research questions

1. What is medical relicensing?
2. What is the body of evidence around how relicensing, and variations of it, work?
3. Where has it been implemented? And in what way has it produced its effects?

5.1.5 Design

a) Inclusion and exclusion criteria

Studies, publications, or reports in the English-language describing medical relicensing were eligible for inclusion. Reports were included for analysis if they 1) Described a national-level medical licensing or relicensing programme or system and/or 2) Reported relevant information (i.e.: the purpose of the programme or system, etc).

Studies outside of human medicine (e.g.: veterinary sciences) and studies exploring national validation other than medical licensing or relicensing (e.g.: revalidation, recertification, maintenance of certification…etc) were excluded from the review. Publication biographies and recent reviews were examined for further articles. All study designs were considered.

b) Search strategy

Terms were listed as Medical Subject Headings (MeSH) or other categories specific to each database. The following seven electronic databases were searched: MEDLINE, EMBASE, Global Health, ERIC, Scopus, Cochrane Library, as well as Google scholar. The search was conducted on 03/04/2017 and refreshed on 19/07/2018. The full search strategy can be found in appendix 1

5.2 Systematic review: Primary care physicians' performance

5.2.1 Introduction

Although many definitions for systematic reviews exist in the literature (Krnic Martinic et al. 2019), it is widely accepted that systematic reviews are reviews of published evidence that systematically collate all empirical evidence that fits a pre-specified criteria in order to answer a specific research question using explicit, and systematic, methods. (Higgins et al. 2022) As the hallmark of evidence-based medicine (Guyatt et al. 1992) systematic reviews are expected to provide reliable findings to inform decision making; this is inherently related to how they are designed and carried out, with a particular view at minimising bias. According to the Cochrane Handbook for systematic review of interventions, systematic reviews must include "a clearly stated set of objectives with pre-defined eligibility criteria for the studies; an explicit, reproducible methodology; a systematic search that attempts to identify all the studies that would meet the eligibility criteria; an assessment of the validity of the findings of the included studies, for example through the assessment of the risk of bias; and a systematic presentation, and synthesis, of the characteristics and findings of the included studies" (Higgins et al. 2022)

Systematic reviews are therefore appropriate to use to identify and/or investigate conflicting results, identify, and inform areas for future research, produce statements to guide decision-making, as well as investigate/address variations in practice, or identify new practices. (Liberati et al. 2009; Aromataris and Pearson 2014; Munn et al. 2018; Krnic Martinic et al. 2019)

5.2.2 Reasoning for method selection

As outlined in more detail in chapter two, physicians' performance is defined differently across the globe (Diallo et al. 2003) which has led to little consistency between countries in terms of how human-resource-for health strategies are monitored and evaluated. Metrics to measure and evaluate health workforce performance globally, particularly physicians, include responsiveness, availability, competence, productivity, quality, amongst many others (Leonard et al. 2015; Scheffler

2012; Overeem 2012; Overeem et al. 2007) which makes 'performance' still quite elusive to pin down as measurements to evaluate the quality and productivity of individual performance and improvement in clinical practice vary. (Kiefe et al. 2001; GMC 2013b) To complicate matters further, the term 'performance' is often used interchangeably with terms such as 'competence' in the literature which is quite unhelpful in terms of clarity.

Meaningful and relevant individual level performance data is key to help doctors understand their landscape of practice, and for policy makers to make evidence informed decisions. And although this is relevant to all medical specialities, it is even more so for primary care as it exemplifies the backbone of health systems. A robust and strong primary healthcare system is the pillar of any high performing health system, and a systematic approach to primary physicians' performance measurement is therefore essential to provide useful information in a timely and ongoing manner to inform planning, management, and quality improvement at both the practice level as well as at the health system level. (Haj-Ali and Hutchison 2017; Southgate et al. 2001) A systematic review to ascertain how primary care physicians' performance is reported in the literature and investigate how assessing physicians' performance generates its effects is therefore the best approach to systematically identify relevant and applicable metrics for physicians' performance assessment and examine their effectiveness and impact on performance improvement in order to provide meaningful, actionable information, and data to improve performance and engage in transformative learning.

5.2.3 The systematic review process

Systematic reviews are highly structured reviews of the literature, the process of which follows a standard method which comprises of seven key stages: 1) Identifying the research questions, 2) Defining the inclusion and exclusion criteria, 3) Identifying relevant studies, 4) Study selection, 5) Data extraction, 6) Quality assessment, and 7) Data synthesis and presentation of results. (Gough, Oliver, and Thomas 2017) Stages one and three are similar to those undertaken in other reviews, such as scoping or literature reviews, while the other stages are quite distinctive to systematic reviews and incorporate characteristic aspects distinguishing them from other types of review approaches.

Stage 1: Identifying the research question

Similarly to the starting point of a scoping review, the first step in a systematic review is to identify the research question. This sets the boundaries of the research and guides the development of the search strategy that will follow. For this systematic review, the main research question was: what

is the impact of various instruments of primary care physicians' performance assessment on their performance? This was then unpacked further to additionally ask: how is individual primary care physicians' performance measured globally? and which metrics and/or proxy indicators and/or outcome measures are used to quantify it?

Stage 2: Defining the inclusion and exclusion criteria

One of the key features that distinguishes systematic reviews from other kinds of reviews is that the inclusion and exclusion criteria in systematic reviews are developed, and set, right after the research question is finalized, but prior to the search for relevant studies takes place. (Higgins et al. 2022) The inclusion and exclusion criteria allow the parameters of a systematic review to be clearly defined and helps determine the scope and validity of results. This can be done in a number of different ways, such as outlining the scope of the population, interventions, comparators and outcomes (PICO); the setting, perspective, intervention, comparison and evaluation (SPICE); or the sample, phenomenon of interest, design, evaluation, and research type (SPIDER). (Krnic Martinic et al. 2019; Munn et al. 2018; Aromataris and Pearson 2014; Gough, Oliver, and Thomas 2017; Meline 2006) For this systematic review the inclusion criteria was underpinned by the PICO approach whereby the population of interest focused on primary care physicians, and the interventions of interest were those that aimed to quantify primary care physicians' performance (i.e.: the outcome of interest) compared to those who have not been exposed to/underwent any performance assessment. Studies discussing general clinical performance or practice performance measure (i.e.: not relating to the individual physician) were not considered, and studies that did not clearly describe how physicians' performance is defined and/or measured were also excluded – the full inclusion and exclusion criteria can be found in section 5.2.5 below.

Stage 3: Identifying relevant studies

Comprehensively identifying research relevant to the questions established in stage one is also the key objective here, as was in the scoping review, therefore similar techniques and diverse sources were also used to search for relevant literature, for example: electronic databases, hand searching of key journals and publications, reference lists search, data and evidence from relevant organizations, networks of researchers and experts in this discipline. In this study the databases MEDLINE, EMBASE, Global Health, ERIC, Cochrane Library and WHO Library and Information Network for knowledge database (WHOLIS) were searched, as well as hand searching of key journals, seminal publications, and reference lists. Endnote x10 bibliographic software

package (The EndNote Team 2020) was used to manage the records and filter through citations and full texts.

Stage 4: Study Selection

The main purpose at this stage is to hone-in on relevant literature and eliminate studies that are not relevant to the central research question. This is closely guided by the inclusion and exclusion criteria which is used as a benchmark against which all the citations are compared to determine their relevance. Once relevant titles and abstracts are identified and appropriately categorised, the next stage requires reading through full articles to decide whether they should be included in the systematic review. It's worth noting that it is recommended that study selection, as well as identifying relevant studies, data extraction, and quality assessment (i.e.: stages three to six), are independently undertaken by two reviewers as this can increase the internal validity of the study and minimises inaccurate, or false, citation inclusion and false exclusion rates, particularly during screening. In this systematic review two reviewers independently, and concurrently, filtered through the citations during the title/abstract study selection process, however, full text study selection, data extraction from selected studies and risk of bias assessment for the included studies was undertaken by the author (SH).

Stage 5: Data extraction

Data extracted from studies included in a systematic review is undertaken in a methodical way and is underpinned by the inclusion and exclusion criteria set out earlier in the study. (Taylor, Mahtani, and Aronson 2021; Higgins et al. 2022; Meline 2006) A data extraction table, or pro forma, is developed prior to commencement with data extraction, which is used by all reviewers involved as a template to populate. Extracted data in this study included information regarding the population, metrics and/or proxy indicators and/or outcome measures used to quantify health workforce performance, and any relevant information, for example: theoretical model(s) or policy structure(s), contextual or other factors.

Stage 6: Risk of bias assessment

A critical step in the systematic review process is to assess the individual included studies for risk of bias. There are varying terms, which are often used interchangeably, to talk about the assessment of studies, these include critical appraisal, quality assessment, internal validity as well as risk of bias assessment, all of which mainly refer to factors that can systematically affect the observations and conclusions of studies and cause them to veer off from the truth, whether intentionally or

unintentionally. (Higgins et al. 2022) Risk of bias assessment includes an assessment for errors or flaws in study design (including accidental, deliberate, or unavoidable), the methodological rigor of included studies, and potential biases which can favour one intervention over another.

In this study the Mixed Methods Appraisal Tool (MMAT) for reviews (Nha Hong et al. 2018) was used as it is suitable for various study designs, including qualitative, quantitative, and mixed methods studies, which was relevant to the heterogenous study designs this systematic review included.

Stage 7: Data synthesis and presentation of results

An approach using critical interpretive synthesis was used to analyse and synthesize data in this study which lent itself more closely to the more critical and theory driven approach the entirety of the PhD has undertaken as a direction of travel. As mentioned previously, critical interpretive synthesis is an approach that draws on systematic review methodology as well on techniques and traditions of qualitative research inquiry (particularly meta-ethnography) thus allowing for more critical scrutiny of the data which embraces theory building and the relationship between evidence and theory. (Sinnott et al. 2020; Dixon-Woods et al. 2006)

5.2.4 Research questions

1. How are individual primary care physicians' performance measured globally?
2. Which metrics and/or proxy indicators and/or outcome measures are used to quantify it?
3. What is the impact of various instruments of primary care physicians' performance assessment on their performance?

5.2.5 Design

a) Inclusion and exclusion criteria

Studies, publications, and reports in the English-language describing how primary care physician performance is assessed were eligible for inclusion. Reports were included for analysis if they 1) Described how primary care physician performance is defined and/or 2) Reported relevant information in terms of metrics and/or proxy indicators and/or outcome measures used to quantify primary care physician performance. Journal articles, reviews, conference papers, editorials, and book chapters were also considered.

Studies including information about health workforce other than physicians or those beyond the health sector were excluded. Studies discussing general clinical performance or practice performance measure (i.e.: not relating to the individual physician) were excluded. Studies that did not clearly described how primary care physicians' performance is defined and/or measured were also excluded. Publication biographies and recent reviews were examined for further articles. All study designs were considered.

Outcomes of interest included 1) Population/country, 2) Metrics and/or proxy indicators and/or outcome measures used to quantify health workforce performance, 3) Relevant information, for example: theoretical model(s) or policy structure(s), contextual or other factors as important to or influential in what was developed or implemented.

a) Search strategy

Terms were listed as Medical Subject Headings (MeSH) or other categories specific to each database. The following six electronic databases were searched: MEDLINE, EMBASE, Global Health, ERIC, Cochrane Library and WHO database (Library and Information Network for knowledge database (WHOLIS). The search was conducted on 02/05/2018 and refreshed on 28/11/19. The full search strategy can be found in appendix 2.

5.3 Semi structured interviews

5.3.1 Introduction

Qualitative research methodology is considered suitable when a researcher investigates a new field of study or intends to ascertain and theorize prominent issues. (Corbin and Strauss 2008; Creswell 2007) Many qualitative research methods and techniques are available to be used to undertake in-depth and extensive understanding for a variety of topics, and the most common types are interviewing and observation. (Creswell 2007)

Semi-structured interviews are in-depth interviews where the respondents are required to answer pre-set open-ended questions. They are widely used in healthcare research and are utilized extensively as an interviewing format with individuals or with groups. (Corbin and Strauss 2008) Semi-structured interviews are usually conducted once only and can last for anywhere between 30 min to two hours, with an average duration of approximately 45min. (DiCicco-Bloom and Crabtree 2006)

5.3.2 The semi- structured interview process

Semi-structured interviews are based on a semi-structured interview guide, which is a schematic representation of questions, or topics, that need to be explored by the interviewer. (DiCicco-Bloom and Crabtree 2006) Interview guides serve the useful purpose of systematically and comprehensively exploring respondents' opinions, thoughts, considerations, and beliefs while staying focused on the desired line of inquiry. (DiCicco-Bloom and Crabtree 2006) The questions in the interview guide comprise of core questions, central to the main research question(s) of the study, as well as many associated questions, which in turn, improve further through pilot testing of the interview guide. (Creswell 2007).

Prior to the interview the researcher would ask the participant to sign a consent form and arrange for an interview which can either be in-person or over the phone/virtually. During the interview, the researcher asks open ended, indirect, probing, and interpretive questions related to the participants' experience, which is guided by the interview guide. Interviews are recorded to allow the researcher to capture all the data and information discussed during the interview more effectively. The recording of the interview helps the researcher to focus on the interview content and the verbal prompts during the interview, as well as enables the generation of "verbatim transcript" of the interview. Participants are encouraged to answer the questions based on their personal experience during the interview, however, they can refuse to answer any questions which they feel uncomfortable with, and they can stop the interview at any time.

The recorded conversation is transcribed by the researcher, who, in the case of this study, was the only person to have access to the recordings. All the information is coded and anonymised and the full transcript is completed and checked by the interviewer for accuracy.

5.3.3 Reasoning for method selection

As outlined in more detail in chapter three, in 2017 the Compulsory Egyptian Medical Training Authority Egyptian (CEMTA) was formally established by virtue of the decision of the Prime Minister No. 210 dated 31/1/2016 (MoHE Egypt 2016) with a mandate to lead the undertaking of medical license renewal in the country, amongst other functions. It has been less clear ever since however, how medical relicensing in Egypt will be linked to better performance of physicians and the ways through which assessment using evidence or theoretical frameworks will inform the development of this large-scale policy intervention. It is also remains unclear what the process of medical relicensing in Egypt will be, which and how healthcare organisations and individuals will

be involved in undertaking this intervention, and what the plans are for the preparation and roll out.

Before the launch of CEMTA, and up until when the interviews were conducted in 2019, very little detail has been published or articulated in the public sphere and by policy makers, particularly regarding the process medical relicensing in Egypt in expected to undertake. A national or wide scale, consultation prior to decision made by the Prime minister also did not take place. This meant that ascertaining any form of concrete or reliable data about the 'what', 'who', 'why', 'where' and 'how' medical relicensing would be undertaken through secondary sources was not possible, and therefore primary data collection through interviews was the best method to capture this data.

5.3.4 Research questions

1. How is medical re-licensing expected to take shape in Egypt? And what is being done to prepare and roll out re-licensing on the individual and institutional levels?
2. What are the key considerations for medical relicensing in Egypt, and how is it expected to affect the performance of physicians in Egypt?
3. Who are the relevant stakeholders involved in medical relicensing?
4. What are the likely intended and unintended outcomes of medical relicensing in Egypt? And what recommendations can be made to navigate through the enablers and barriers?

5.3.5 Design

a) Sample and location

The scarcity of data on medical relicensing in Egypt and the paucity of stakeholders well versed with relevant and up-to-date information in that regard lent itself to using non-probability purposeful sampling as a technique of choice. Purposive sampling is widely used in qualitative research (Patton 2002) and is particularly useful method to identify and select 'information-rich' subjects (Patton 2002; Palinkas et al. 2015). In purposive sampling, the individuals identified and selected are especially knowledgeable about, or have particular experience with, the phenomenon of interest. (Creswell and Clark 2011)

Non-probability purposeful sampling (Patton 2002) was used to identify and select 'information-rich' subjects (Patton 2002; Palinkas et al. 2015; Creswell and Clark 2011) who were particularly knowledgeable about, or have relevant experience in, medical regulation in Egypt and in similar

health system contexts. Participants included national (i.e.: Egypt) and international experts in the field of health workforce with extensive experience and research in the subject matter which encompassed the fields of medical education, training, capacity building and/or regulation. In terms of the national experts, a particular emphasis was to include those who are/have been involved in the process of relicensing in some capacity, and those engaged in primary care.

Those who wished to participate were contacted to arrange for an interview either in person or over the phone/virtually, and a copy of the participant information sheet and consent form (appendix 3) was shared with them.

b) Participants

Participants included national and international experts in the field of health workforce with extensive experience and research in the subject matter which included the fields of medical education, training, capacity building and/or regulation. In terms of the national experts, a particular emphasis was to include those who are/have been involved in the process of relicensing in some capacity and those engaged in primary care. Those without prior experience in health workforce development or those who do not have insight into medical education, training, capacity building and/or regulation were not targeted for this study.

Only one interview per participant took place, which was conducted in English and/or Arabic based on the interviewees' preference and mastery of the language, and all the responses from the participants were anonymised. All interviews were conducted by the primary researcher (SH, Female) who is experienced in qualitative research methods, has subject matter expertise, and has mastery of both languages. Interviews conducted in Arabic were directly translated into English, verbatim. Translation of the transcripts was carried out immediately after the interview by the primary researcher to consider any clarification. This process was carried out using Microsoft Office Word.

To further enhance the design and relevance of the interviews, one pilot interview was conducted which resulted in expanding some of the key questions pertaining to the intended and unintended outcome considerations of medical relicensing in Egypt, and the key role of governance and preparedness for roll out. Each participant was invited individually via email, and a copy of the participant information sheet and the consent form was shared. All participants were informed that they were free to withdraw from the study at any stage, without penalty, and no reasons would need to be given. Interviews lasted between 45min – 90min, and took place between December

2018 and April 2019 in person, via phone, or video conferencing, based on the preference and proximity of the participant.

c) Recruitment

20 participants were contacted between October and November 2018, with a target of ten initially pursued for manageability and presumed saturation. (Fink, Kosecoff, and Brook 1984; Malterud 2001) Data saturation is defined as the point in which no new information in data collection and analysis address the research question. (Guest, Bunce, and Johnson 2006; Birks and Mills 2015; Glasser and Strauss 1967) Each participant was given information concerning the timescale of the study and the potential time commitment involved. They were asked to reflect on this to ensure that they can devote the necessary time to the study.

d) Withdrawal Criteria

All participants were informed that they were free to withdraw from the study at any stage, without penalty, and no reasons will need to be given. Participation was voluntary and they were able withdraw at any time without giving any reason for their withdrawal. The withdrawal criteria were clearly stated in the participant information sheet and the consent forms which was circulated prior to participation.

e) Data analysis

Thematic analysis was the method of choice for this study, due to its powerful yet flexible approach that can be used in a variety of paradigmatic or epistemological orientations. (Braun and Clarke 2006; Kiger and Varpio 2020) Thematic analysis is a practical data analysis approach that is widely used in qualitative research whereby themes, or meaning patterns, are actively constructed from the data. These can be generated inductively or deductively. (Braun and Clarke 2006) It entails searching across a data set to identify, analyse, and report repeated patterns and is an appropriate technique for analysis seeking to understand experiences, opinions, beliefs, thoughts, or behaviours across a data set to produce insightful discoveries that lend themselves to answer the study's research questions. (Corbin and Strauss 2008; Creswell 2007; DiCicco-Bloom and Crabtree 2006; Braun and Clarke 2006)

The approach for thematic analysis of the interview data used in this study is primarily built upon the theoretical positions of Braun and Clarke who identify thematic analysis as a method used for

"identifying, analysing, and reporting patterns (themes) within the data" (Braun and Clarke 2006) and was undertaken using the widely accepted six-step process which includes: 1) Familiarizing oneself with the data, 2) Generating initial codes, 3) Searching for themes, 4) Reviewing themes, 5) Defining and naming themes, and 6) Producing the report. The framework method (Ritchie et al. 2013; Gale et al. 2013) was used to analyse the data, whereby iterative inductive and deductive approaches were undertaken for theme abstraction. Codes were used to classify and manage the data as presented in the transcribed interview text and were organised in an analytical framework. The codes were grouped into clusters of similar and interrelated concepts to form categories, which were then deduced and abstracted into subthemes and themes.

It's important to note that although the six-step process for the data analysis appears to be sequential, an iterative approach was adopted to unpack, critique, and analyse meaning to the most granular level. The transcripts were manually coded in Microsoft Office Excel, and nodes and sub-nodes were developed to explain patterns that were further developed into themes.

There are several ways to approach reporting and synthesis of qualitative research in order to ensure that all relevant characteristics and themes regarding the study design and results are presented appropriately. (O'Brien et al. 2014a; Anderson 2010) These approaches include the COREQ (Consolidated criteria for Reporting Qualitative research), the SRQR (Standards for Reporting Qualitative Research and the ENTREQ (Enhancing Transparency in Reporting the synthesis of Qualitative research) which encompass guidelines, critical appraisal criteria, and reporting standards. (O'Brien et al. 2014a; Tong, Sainsbury, and Craig 2007; O'Brien et al. 2014b; Tong et al. 2012) In this study the COREQ criteria, which includes a 32-item checklist, was used to synthesize, and report the findings to ensure transparency and clarity in reporting aspects of the research team, study context and methods, findings, analysis, and interpretations.

5.4 The Modified Delphi

5.4.1 Introduction

The Delphi technique, originally developed by Dalkey and Helmer in the 1960s, is a method for consensus-building by way of using a series of consultations (also known as 'rounds') to collect data from a panel of selected experts. (Dalkey and Helmer 1963) The questions asked in each round are, in part, based on the findings of the previous round, and those who participate are able to see the anonymised results of previous rounds, including their own responses. This approach creates an opportunity for a study to evolve over time and allows participants to progressively

reflect on their own views, as well as the views of others, and subsequently repositioning their own opinions. (Keeney, Hasson, and McKenna 2006; Barrett and Heale 2020; Villiers, Villiers, and Kent 2005)

The Delphi method is a useful data gathering and analysis technique to use to develop a consensus of opinion in regard to a well-defined topic. (Skulmoski et al. 2007; Dalkey and Helmer 1963; Hsu and Sandford 2007) It is also a practical method to use for organizing large masses of information, evidence, and expertise to achieve informed judgment, decision-making, and forecasting, as well as discussing problems of both numerical and non-quantifiable nature. (Barrett and Heale 2020; Villiers, Villiers, and Kent 2005)

5.4.2 The Delphi technique process

The Delphi technique typically requires multiple administrations of anonymised questionnaires, usually over two or three rounds with at least 10 participants. (Trevelyan and Robinson 2015; Villiers, Villiers, and Kent 2005; Hsu and Sandford 2007; Dalkey and Helmer 1963) This can be completed either in-person, or online. In the classic Delphi technique, the first round of data collection typically generates qualitative data which is then used to guide the development of statements for the questionnaires in the subsequent rounds. In a modified Delphi technique, the first round can be replaced with an extensive review of the literature, and/or findings from a preceding study, which is used to derive the statements for the subsequent questionnaires. The first round in a modified Delphi study therefore becomes a structured set of questions, including open-ended questions and free text, which the participants are asked to answer, complete, rate or rank-order to establish preliminary priorities among items. This is the approach used in this study.

After the conclusion of round one, and receiving the participants' responses, the study investigator summarises the results for this round and identifies areas where consensus was not reached. (Hsu and Sandford 2007) In the second round, each Delphi participant is asked to review the items summarised by the investigator based on the information provided in the first round and re-rate or re-rank items or areas where consensus was not reached in the previous round. As a result of round two, areas of disagreement and agreement are identified (Dalkey and Helmer 1963) and consensus begins forming allowing for the actual outcomes to be presented among the participants' responses. This provides an opportunity for participants to reflect on their own responses, as well as the responses of others, which allows them to reposition their viewpoints. In the third, and often final, round each Delphi participant, once again, receives a questionnaire that includes the items and ratings summarized by the investigator in the previous rounds and are asked

to revise his/her judgments or "to specify the reasons for remaining outside the consensus" (Skulmoski et al. 2007)—In this round Delphi participants have a final opportunity to revise their judgments or to make further clarifications regarding the information and their judgments of the relative importance of the items. The final round can also take the form of a focus group whereby facilitated group discussion takes place to discuss and explore areas where consensus has not been reached. (Jorm 2015; Kidd and Parshall 2000) It's worth noting that, both the classic and the modified Delphi techniques, through their design process of data collection and synthesis, inherently ensure participants anonymity, and that the dominant participants do not unduly influence data collection.

5.4.3 Reasoning for method selection

Following on from the semi structured interviews, which identified key knowledge from expert stakeholders in Egypt, and in the field of health workforce globally, regarding medical relicensing in Egypt, a preliminary conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt was developed. This preliminary conceptual framework was also informed by ongoing refinement of the context-mechanism-outcome configuration in light of the data synthesis from the previous studies, which resulted in new, and context-sensitive, information which mapped the various ways by which relicensing can affect performance of physicians in Egypt. This created a unique opportunity to 'test' this new knowledge and generate insights on this controversial topic which clearly little was known about, as well as describe a variety of alternatives which this policy intervention can encompass. (Strauss and Zeigler 1975; Kay, Rayens, and Hahn 2000)

As a research method that addresses multiplicity of issues and provide direction for policy change (Santaguida et al. 2020; Hsu and Sandford 2007; Clayton 2006; Jorm 2015; Kay, Rayens, and Hahn 2000) a modified Delphi study was therefore best suited to identify what the priorities are, and consensus around, the implementation of relicensing in Egypt in a systematic and effective way. As a technique that encompasses components that are both qualitative and quantitative, it is unique in that it crosses the methodological divide and is well-matched to produce policy solutions under conditions of uncertainty. A series of questionnaires using a modified Delphi technique were hence used. This was combined with controlled opinion feedback, and the opportunity for participants to modify their responses, to enable the development of a co-produced conceptual framework demonstrating how relicensing is expected to affect the performance of physicians in Egypt, and the opportunities and challenges of various strategy directions. More specifically, the objectives of

this study were to: 1) Test the preliminary conceptual framework by identifying the most important considerations for the conceptual framework showing how relicensing is expected to affect the performance of physicians in Egypt, 2) Identify the key factors that lend themselves to likely intended and unintended outcomes of this policy intervention, and identify possible recommendations to navigate through the enablers and barriers from local experts, and current practitioners in Egypt, and 3) Build consensus around key considerations and priorities to support effective implementation of medical relicensing in Egypt. The aim was to enable the development of a co-produced evidence-informed conceptual framework for medical relicensing in Egypt.

5.4.4 Research questions

1. What are the most important considerations for medical relicensing in Egypt?
2. What are the key priorities to support effective implementation?
3. What's the consensus around recommendations that can be made for the way forward to navigate through the enablers and barriers of realising medical relicensing in Egypt?

5.4.5 Design

a) Sample and location

An email was circulated to each participant inviting them to participate and confirming their willingness to take part in the study. Those who wished to participate were contacted by the researcher (SH) with the survey link and a copy of the participant information sheet (appendix 4). Each questionnaire round was circulated via email to be completed in the privacy of the individual's own time to avoid bias or coercion. Questionnaires were administered online via the Qualtrics survey tool (Qualtrics 2020) and participants were able to complete them over multiple sittings within the two-week window the questionnaires were accessible. All responses from the participants were anonymised prior to collation and circulation. Similarly to the approach used in the semi-structured interviews in the earlier study, non-probability purposive sampling was also used.

b) Participants

Participants included Egyptian physicians (both in training and fully trained) working in Egypt, and national experts in the field of health workforce with extensive experience and research in the subject matter which encompassed the fields of medical education, training, capacity building

and/or regulation. There was a particular emphasis to include all those who would be affected in any way by the introduction of medical relicensing which included junior and senior physicians, academics, and those engaged in the medical regulatory landscape in Egypt. The questionnaires were all developed and disseminated in English. Participants were required to respond across all three rounds.

Participants were contacted by the researcher (SH) with the survey link and a copy of the participant information sheet and consent form (appendix 4). Each participant was given information concerning the timescale of the study and the expected time commitment involved. They were asked to reflect on this to ensure that they can devote the necessary time to the study. As mentioned previously, the questionnaires for rounds one and two were administered online via the Qualtrics survey tool and participants were able to complete them over multiple sittings within the two-week window the questionnaires were accessible. The focus group discussion (third round) was undertaken virtually using MS Teams online communication video platform, and the discussion was recorded and transcribed.

The statements in the questionnaires in rounds one and two were categorised under three domains: Domain 1: Relicensing as a tool to improve healthcare quality and safety standards; Domain 2: Key considerations for medical relicensing in Egypt; and Domain 3: Key priorities to support effective implementation of relicensing in Egypt. Each statement had five response options: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree and participants were asked to choose how much they agreed or disagreed with each statement under each domain (appendix 5).

c) Recruitment

Out of 32 participants invited to take part in the study, 19 agreed to agreed participate, 17 of which completed the survey. All 17 participants completed rounds one and two. Round three comprised of a focus group discussion with seven participants from the pool of 17 who were willing to take part. Similarly to the approach used in the semi-structured interviews in the earlier study, non-probability purposive sampling was also used. Recruitment took place between the 27th February to the 7th April 2021.

The first questionnaire was available between the 14th and the 28th February 2021(two weeks), the second questionnaire was available between the 21st March and the 4th April 2021(two weeks), and

the third round was conducted in the form of a virtual focus group discussion on Microsoft Office Teams on the 19th April 2021.

d) Withdrawal Criteria

All participants were informed that they will be free to withdraw from the study at any stage, without penalty, and no reasons will need to be given. This information was clearly stated in the participant information sheet, along with the purpose of the research and the timescales required. Informed consent was required at the outset of each round and participants were unable to progress with the questionnaire without confirming consent. All responses from the participants were anonymised prior to collation and circulation.

e) Data analysis

The first questionnaire included 78 questions and was available between the 14th and the 28th February 2021 (two weeks), the second questionnaire included 18 questions and was available between the 21st March and the 4th April 2021 (two weeks), and the third round was conducted in the form of a virtual focus group discussion on Microsoft Office Teams on the 19th April 2021. Descriptive statistics were used to evaluate consensus agreement, including percentage agreement and coefficient of variation. The latter is a measure of dispersion of data points around the mean; it is defined as the ratio of the standard deviation to the mean. (Kesteven 1946; European Commission 2021) The Analysis included mean rating, percentage agreement, percentage disagreement, variance, standard deviation, and coefficient of variation. Consensus was established if ≥ 70%of participants agreed/strongly agreed or disagreed/strongly disagreed with a statement. For each round a composite ranking of statements which have not reached consensus was produced and circulated to the participants at the outset of the following round. Analyses was conducted using Microsoft Office Excel.

5.4.6 Ethics

a) Ethical Approval

Ethical approval was granted from the Head of Department (Department of Primary Care and Public Health, School of Public Health, Imperial College London) and from the Imperial College Joint Research Compliance Office for the semi-structured interviews and the modified Delphi studies.

b) Consent and confidentiality

Those who wished to participate were contacted and a copy of the participant information sheet and consent form was shared with them. They were asked to sign the consent form before they participate. Individual responses from participants were confidential and anonymised prior to collation. No personal details were collected from the participants; anonymity and confidentiality of participants was strictly protected throughout the stages of the study. The interview transcripts were coded individually, and the study investigators alone had access to the codes. Focus group transcripts (round 3 in the modified Delphi) were coded separately, and the study investigators alone had access to the codes. No personal details were collected from the participants and anonymity and confidentiality of participants was strictly protected throughout the stages of the study. They were made aware that there will be no adverse consequences if they decide to withdraw. If participants decided to withdraw after starting or completing the interview or the Delphi rounds at any stage of the data collection process, their completed data was deleted from the database and was not considered as part of the analysis process. The collected data was stored electronically in highly secured computers at Imperial College London, Department of Primary Care and Public Health. Any printed hard copies of the interview transcripts that may have been used for analyses was stored in locked drawers at Imperial College London, Department of Primary Care and Public Health and only the primary researcher (SH) had access to these materials. No identifying information was held in relation to the interviewed participated which can be linked to the data collected. Dates of birth or home postcodes of participants were not recorded.

c) Indemnity, sponsorship and funding

Imperial College London holds negligent harm and non-negligent harm insurance policies which apply to this study. Imperial College London acted as the main sponsor for this study. This study is funded by the Department of Primary Care and Public health, which is part of the Faculty of Medicine, at Imperial College London.

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In this chapter I discussed in detail the methods I used to collect and synthesise data for the four principal empirical studies in this thesis: 1) Scoping review: Medical re-licensure, 2) Systematic review: Health workforce performance, 3) Semi structured interviews, and 4) Modified Delphi study which are discussed in terms of the rationale for choice, design, approach, and the steps undertaken to complete them. In the next chapter I appraise and analyse the literature on

physicians' validation systems, and regulatory interventions used to attempt to quantify physicians' performance, which I then synthesize, to inform the development of the preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance. The next chapter is informed by the results from the scoping review on medical relicensure.

CHAPTER 6: PHYSICIANS' PERFORMANCE VALIDATION SYSTEMS

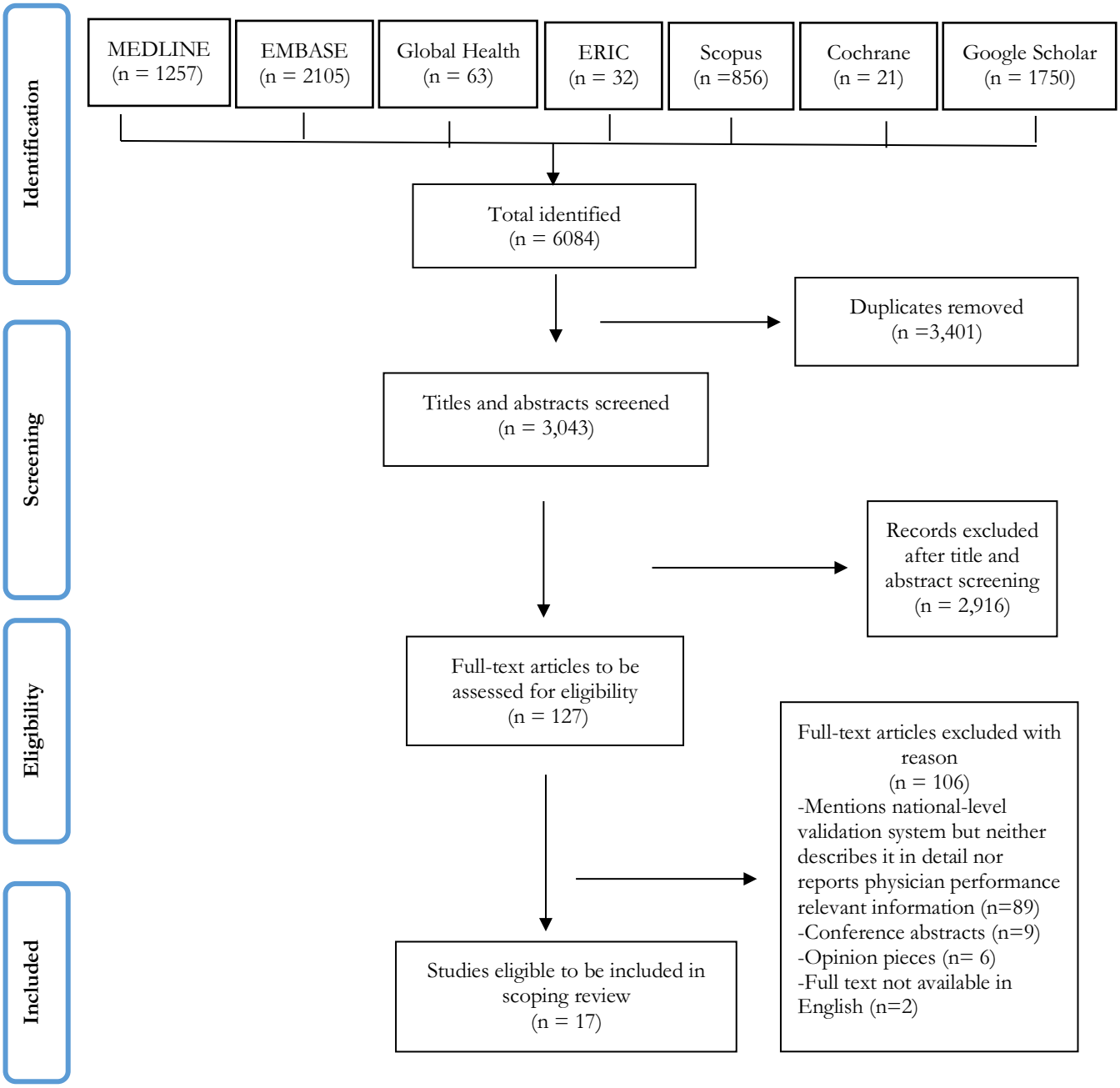
6.1 Introduction

In the literature, broad variations in the approaches used to attempt to quantify health workers' fitness to practice across health systems can be seen (Pringle 2006; Hawkes 2012; Teirstein 2015; Horsley et al. 2016). These vary from continuing medical education approaches (for example: providing evidence for attending educational activities and events), audits, and gathering performance related data. There's also variability in the names and definitions used to describe these national validation systems, ranging from renewal of licence (relicensing), revalidation, and recertification, each aiming to achieve a slightly different objective. This broadness and incongruence within the literature on approaches and regulatory interventions used to attempt to quantify health workers' fitness to practice , including relicensing, warranted the use of a methodological approach suitable to examine the extent, range and nature of research that underpins this area of study, and to summarise and appraise the evidence in the literature, which is what this chapter offers.

The review process in the scoping review that informed this chapter comprised five key stages as per Arksey and O'Mally's scoping review framework (Arksey and O 'Malley 2005; Davis, Drey, and Gould 2009): 1) Identifying the research questions, 2) Identifying the relevant studies, 3) Study selection, 4) Charting the data, and 5) Collating and summarising the results. The review was iterative in terms of its search and scope and was used to further develop aspects of the programme theory which would then be refined following further generation of knowledge and data collection at later stages. The realist logic underlined the approach to evidence synthesis and was used to develop and refine each component of the preliminary programme theory.

Searches resulted in retrieval of 6,084 records, 3,401 of which were duplicates. Following the screening of title and abstracts, 2,916 were further removed. Screening of the remaining full texts further resulted in 106 records removed, subsequently deeming 17 eligible records to be included in this scoping review (figure 6.1). The screening and charting process were undertaking by a single reviewer (SH), and data was extracted from the included studies using a data extraction form designed to respond to the research questions of the study and fulfil its objectives. The form was completed in a Microsoft word document for each of the studies and an overall summary of the included studies and key data was produced (table 6.1)

Figure 6.1: Scoping review PRISMA chart



Source: Author

Dates of publications ranged from 2006 to 2019. Country of the publication origin (defined as that of the primary author) included the United Kingdom (UK), the United States of America (US), the Netherlands, Belgium, and Austria. Of the included 17 studies, 10 examined the United Kingdoms' national Revalidation and appraisal systems, six examined the United States maintenance of certification programmes (across various specialities), two examined the Dutch recertification program, one examined the Canadian Maintenance of Licensure Program and the

Canadian Revalidation Program, and one examined the Austrian, Belgian, French, German, and Spanish equivalent validation systems. There were eight reviews (including scoping and realist reviews), four qualitative studies (semi-structured interviews), two cross-sectional studies, and one retrospective cohort study. Given that the study discussed here is a scoping review, individual studies were not evaluated for their risk of bias or for quality.

6.2 The scope, scale, and theoretical underpinnings of global physicians' performance validation systems

I initially set out to appraise the literature through a scoping review on medical relicensure, however it was clear at the outset of the search strategy development process that research on relicensing specifically was scarce and hence the search scope was expanded to include revalidation, medical appraisal, and recertification to encompass a wider scope of understanding. In this section, findings are organised under three main categories which respond to the scoping review study research questions, which in turn aligns with the first objective of the PhD and related research questions, as mapped out earlier (chapter 5, figure 5.1). These are:

- Global physician performance validation systems & regulatory interventions, and their relationship with physicians' performance: Key concepts
- Theories and causal mechanisms at work in health workforce performance evaluation
- Refined initial program theory and the context-mechanism-outcome configuration (CMO-C)

6.2.1 Global physician performance validation systems & regulatory interventions, and their relationship with physicians' performance: Key concepts

Findings from across country experiences analysed from the 17 included studies all share that regulatory approaches and interventions intended to regulate and validate physicians practice are primarily geared towards strengthening mechanisms of professional accountability, and accountability to the public. (Cook et al. 2016; Tazzyman et al. 2017; Tazzyman et al. 2018; Gutacker et al. 2019; Guillemin et al. 2014; Archer and De Bere 2013; Walshe et al. 2017; Lainhart and Hagen 2014; Brennan et al. 2017; Merkur et al. 2008; O'Neill and Puffer 2013; Levinson and Holmboe 2011; Hagen et al. 2006; van den Heuvel 2008; Tazzyman et al. 2019; Horsley et al. 2016; Sehlbach et al. 2018a) Professional accountability is understood to be as accountability for maintaining and improving professional standards, while accountability to the public focus more on ensuring safe practice and the highest level of care provision. The need for formalising such

mechanisms of accountability primarily stemmed from the global movement away from the historical self-regulation modus operandi that the medical profession has formally, and informally, operated for decades. (Chamberlain and Chamberlain 2009; Bryce et al. 2018) The underlying reasons and motivation for this global movement are many (Brennan et al. 2010; Wilson et al. 1999), including growing demands for professional accountability, which was mentioned before, improvement in quality-of-care provision, and generally speaking ensuring a basic level of care across the board. (Sutherland and Leatherman 2006b; 2006a; Brennan et al. 2004) In some countries the need for formalising such mechanisms of accountability was more urgent than in others, and perhaps took on a more social and political imperative, such as in the UK, where the tipping point was high profile malpractice & medical negligence cases which unmasked the ineffectiveness of the regulatory mechanisms at the time, and the overall governance systems' gross failure to uphold the standards of the profession, and safeguard the public from harm. (Department of Health 2007; Exworthy 2015; Dixon-Woods, Yeung, and Bosk 2011; Salter 2001)

As mentioned previously, names and description vary across validation system with some terminology often used interchangeably which warranted a more cohesive and clear cataloguing of the various national-level programmes, or systems, described in the included studies, and the purpose of those programme. Table 6.1 serves as a summary of the validation systems, the terminology used, and the purposes attributed to such validation systems in the studies included in this scoping review.

Table 6.1: Summary of the validation systems, the terminology used and the purposes in the studies included in this scoping review.

Reference	Country/ Setting	National-level medical licensing &/or relicensing programme or system described	Purpose of the programme &/or system
(Tazzyman, A. et al. 2019)	UK	Revalidation (UK)	'To improve patient safety and the quality of medical care. To demonstrate, on a regular basis, that doctors are up to date and fit to practice in their chosen field and able to provide a good level of care.'
(Cook, D. et al. 2016)	US	American Board of Medical Specialties Maintenance of Certification Program (US)	'To identify satisfactory evidence of doctors commitment to continued competence in their practice and contribute to their professional development.'
(Levinson, W. and Holmboe, E. 2011)	US	American Board of Internal Medicine Maintenance of Certification Program (US)	'A systematic way to assess physician knowledge, skills, and actual care delivery in a transparent and ongoing fashion.'

(Merkur, S. et al. 2008)	Austria, Belgium, France, Germany, The Netherland, Spain, UK	CME and CPD systems across the eight countries	'To demonstrate that the competence of doctors is acceptable. It involves participation in continuing medical education (CME), designed to keep physicians up-to-date on clinical developments and medical knowledge.'
(Brennan, N. et al. 2017)	UK	Mandatory doctors annual appraisal in the UK	'To give feedback on a doctor's performance, map a doctor's progress and outline further development requirements.'
(Walshe, K. et al. 2017)	UK	Revalidation (UK)	'To demonstrate on a regular basis that they are up to date and fit to practice in their chosen field and able to provide a good level of care.'
(Horsley, T. et al. 2016)	UK, US, Canada	American Board of Medical Specialties Maintenance of Certification Program (US) Federation of State Medical Boards Maintenance of Licensure Program (Can) Canadian Revalidation Program (Can) UK Revalidation Program (UK)	'To provide satisfactory evidence of their commitment to continued competence in their practice.' *American Board of Medical Specialties Maintenance of Certification Program* 'To improve quality of healthcare delivery and engage in a 'culture of continuous quality improvement and lifelong learning assisted by objective data and resulting in significant and demonstrable actions resulting in the improvement of patient care and physician practices.' *Federation of Medical 2010 Regulatory Authorities of Canada maintenance of licensure* 'To provide satisfactory evidence of their commitment to continued competence in their practice, and demonstrate their commitment to continued competent performance in a framework that is fair, relevant, inclusive, transferable and formative.' *Canadian Revalidation* 'To demonstrate that they meet the standards that apply to their particular medical specialty.' *UK Revalidation*
(van den Heuvel, H. 2008)	Netherlands	'Herregistratie' (Recertification) of General practitioners	Not discussed
(Hagen, M. et al. 2006)	US	American Board of Medical Specialties Maintenance of Certification Program (US)	'To assess 4 important physician characteristics: professionalism, self-assessment and lifelong learning, cognitive expertise, and performance in practice.'
(O'Neill, T. and Puffer, J. 2013)	US	American Board of Family Medicine Maintenance of Certification Program (US)	'To assess doctors clinical decision-making skills and the adequacy and currency of their fund of knowledge related to their specialties.'

(Lainhart, N. and Hagen, M. 2014)	US	American Board of Family Medicine Maintenance of Certification Program (US)	'To assess a Diplomate's competence in systematic measurement and improvement in patient care.'
(Archer, J. and De Bere, S. 2013)	UK	Revalidation (UK)	'To bring all doctors into a governed environment. To support professionalism and identify early doctors in difficulty to support their remediation and so assure patient safety.'
(Guillemin, M. et al. 2014)	UK	Revalidation (UK)	'To regulate licensed doctors to ensure that they are 'up-to-date and fit-to practice '. Fundamental to the policy is that the revalidation of doctors should benefit patients and improve doctor-patient relationships.'
(Gutacker, M. et al. 2019)	UK	Revalidation (UK)	'To show periodically that they are up-to-date and fit to practice medicine. Revalidation was viewed as a 'historic' change, which would 'make a major contribution to the quality of care that patients receive.' and '…give them valuable assurance that the doctors who treat them are regularly assessed.'
(Tazzyman, A. et al. 2018)	UK	Revalidation (UK)	'To demonstrate on a regular basis that they are up-to-date and fit to practice, by bringing a portfolio of evidence (called supporting information) of continuous professional development (CPD), peer and patient feedback, quality improvement or audit, and significant events to their annual appraisal.'
(Tazzyman, A. et al. 2017)	UK	Revalidation	'Process by which all licensed doctors are legally required to demonstrate that they are up to date and fit to practice in order to maintain their licence.'
(Sehlbach, C. et al. 2018a)	Netherlands, Switzerland, Germany, UK, Ireland, Denmark, Hungary, Poland, Portugal, Spain	Recertification	'Formal procedure of assessing and attesting quality of service provided in accordance with established requirements or standards which aims to address any decline in performance as well as to ensure trained doctors' adaptation to advances in knowledge and technology.'

Source: Author

As seen in table 6.1, the nature of the regulatory approaches and schemes vary significantly across countries. This variation can also be seen in the organisations responsible for regulating physicians, and the degree of authority they possess. In most cases, the main stakeholders, or regulators, are either professional medical bodies (for example: in Austria, Germany, Netherlands, and Spain), or Ministries/Departments of Health (for example: in Belgium and the UK), however in some cases it may be the medical insurers who have more control in terms of the determining requirements

from physicians to be contracted with them (such as in Canada and the US). More often than not however, it appears to be a combination of stakeholders that, in practice, share these governance and regulatory responsibilities. (Sehlbach et al. 2018a; Brennan et al. 2004; Merkur et al. 2008; Tazzyman et al. 2017)

The schemes or methods to regulate within national-level programmes or systems can be divided into two main categories: compulsory and voluntary. Compulsory systems such as the ones found in Canada, Germany, the Netherlands, the UK, and the US, require a formal review and/or audit to be undertaken for continuous medical education (CME) and continuous professional development (CPD) activities completed by physicians on a cyclical basis (ranging between 3-10 years across systems) with potential consequences for non-compliance. CME and CPD activities include appraisals, workshops, peer/patient/multisource feedback, self-assessment and reflection, relevant educational and professional activities, clinical audits, international conferences, and, in some instances, courses followed by examination.

Voluntary systems on the other hand are primarily geared towards self-assessments and adopt broad criteria for CME and CPD. Voluntary systems can be seen to be primarily based on activities to promote lifelong learning and professional development. Such voluntary systems often lack an overarching competency framework, and include very limited, if any, components assessing performance in practice, or elements to periodically attest to physicians' professional proficiency in their field.

It's worth noting that although variation clearly exits across activities, assessment criteria, and oversight, that causal links with improved patient outcomes, quality of care provision, or safety are yet to be established. (Sehlbach et al. 2018a) Having said that, as components of regulation, some activities, or approaches to CME and CPD, stand out as unique and important innovations when contrasted with systems of medical regulation internationally, offering noteworthy and useful examples, particularly for objective evaluation of performance and meaningful reflection which can potentially be used as exemplars to stimulate positive behavioural change. Such innovations can be found in the 'appraisal', and the 'responsible officer role' components of the UK Revalidation system, as well as the 'site visit' components of the Dutch recertification system which are elaborated on in further detail below.

Revalidation in the UK began in December 2012, and is the process by which doctors are assessed against standards set out by the General Medical Council. (GMC 2013a) It marked a sea-change in the professional regulation of doctors in the country and was faced with strong contestation, with

some regarding it as technical and bureaucratic, and others considering it as important and timely to improve quality of care provision and protect patients. (Greenhalgh and Wong 2011; Archer 2015; Catto 2005; DH-Workforce Directorate 2008; Archer and De Bere 2013) Revalidation instigates doctors to proactively demonstrate that they are up-to-date and fit to practice, every five years, by showcasing a body of supporting evidence which is linked to annual appraisals. Supporting evidence includes five yearly multi-source feedback from colleagues and patients and a quality improvement activity. Each annual appraisal requires supporting information that shows progress against preceding years' personal development plan, any significant events that the doctor has been involved with, two reviews of clinical cases, a list of compliments and complaints and reflective writing demonstrating how these activities have impacted on the doctor's practice. (GMC 2018; 2019; 2015a; 2017; 2013a; Griffin et al. 2015)

The innovation here is not necessarily the components within the revalidation, such as the multi-source feedback, or the list of compliments and complaints, which other validation systems tend to incorporate -- and arguably, this system still misses a causal link with actual practice -based performance as other systems do -- but rather the unique aspect here is the way by which the revalidation itself is undertaken whereby appraisals from the previous five years are taken into consideration, and instead of doctors interacting directly with the regulator, revalidation is under the auspices of a 'responsible officer' (RO), who liaise between the doctor and the regulatory body, allowing for a more objective approach to data collection and consideration for the process to be undertaken. ROs are licensed by the General Medical Council (GMC) to undertake the RO role; they must be doctors who hold a GMC licence to practice. They act as liaisons between the doctor undertaking revalidation, their employer, and the regulator (the GMC). (Tazzyman et al. 2017; Griffin et al. 2015; Bryce et al. 2018; DoH 2015) It's worth noting that the evidence from each appraisal itself, which doctors are required to undertake every year, feeds directly into the revalidation process, and is positively viewed by many doctors who consider it enhances their learning, encourage their professional development and improve their overall practice . (Finlay and McLaren 2009)

The advantages here can be considered to be the stepwise approach to the evidence generation and collation for the revalidation as well as the objectivity offered by the responsible officer. Moreover, the annual appraisal offers a 'spot check' approach throughout the five years which can be useful to identify early red flags within the five-year interval between which revalidation is required, thus allowing for early intervention if any performance issues maybe suspected. On the flip side, this is quite a complex system with many working parts and elements which are inherent

to the national health system governance and information design and may not be easily emulated in health systems with resource constraints and weak governance or health data networks.

Since 2005, Dutch physicians have had to undertake CME activities and undergo a visit by peers every five years as part of their recertification process. (Merkur et al. 2008) These site visits (called 'visitatie') are conducted by a team of three other doctors, including one recently visited and one about to be visited, and involve a comprehensive assessment of practice, discussions regarding adherence to clinical guidelines, as well as patient input. (Sehlbach et al. 2018a; Merkur et al. 2008)

This approach can be quite useful to evaluate elements of individual and team functioning in practice and can tease out components such as communication and collaboration skills which can otherwise be challenging to appraise. It also offers a diversity in input from three peers, and an opportunity for discussion for performance improvement. Transparency in reporting and relationships/vested interest must be clearly declared in such activities however, to avoid favouritism, or complacency which would defeat the purpose of such an activity and render it a tick-box exercise with minimal meaningful impact.

6.2.2 Theories and causal mechanisms at work in health workforce performance evaluation

Identifying causal mechanisms in the health workforce performance evaluation process can contribute to further insights, and better understanding, of how physicians' performance is impacted by regulatory interventions, such as relicensing, and can contribute towards building a construct of how relicensing is expected to affect the performance of physicians in Egypt when it's rolled out. Guided by a critical interpretivist approach for the analysis, I used an iterative and dynamic method to data selection, and critically examined the underlying assumptions in the literature identified through this scoping review which enabled me to explicitly identify underlying theories at work, thus informing and underpinning the causal mechanisms of interest. Theories identified encompassed those within socio-cognitive, learning & education, and psychological fields, which all inform the causal mechanisms in various ways. In this section I discuss the ascertained theories and how they can explain various aspects of physicians' performance when interacting with evaluation processes and inform the design of activities encompassed within it. This is followed by section 6.4.3 whereby I translate and coalesce this new knowledge to further inform the generative explanation for causation and the refined context-mechanism-outcome configuration (CMO-C).

Learning and educational theories:

The pedagogy–andragogy–heutagogy continuum

Adult learning takes various forms throughout life and professional stages (Knowles, Holton III, and Swanson 2021), and it can be argued that understanding how adults, like physicians, learn can lend itself to guiding the design of more meaningful learning activities that can positively influence performance. Learning takes different forms; it can be dependent (Pedagogy), self-directed (Andragogy) or self-determined (Heutagogy) and often throughout the physicians' career it takes the form of a continuum moving between all three forms. (Taylor and Hamdy 2013; Blaschke 2019) Findings from the studies shows that each form has its place within the performance evaluation process and that a combination of methods, principles and approaches is key to support doctors in their ongoing professional development and support them to meet the required standards for continued practice.

Pedagogy as a concept has evolved over centuries dating back to Socrates and Plato (Taylor and Hamdy 2013) and is underpinned by notions of structured teaching and guidance. (Kaushal et al. 2022) Pedagogical design, which promotes active learning, critical thinking, and reflective practice, can support ongoing learning and professional development. (Herodotou et al. 2019) In practice this can mean employing strategies and designing activities that are relevant and aligned with the evolving health and care landscapes and the needs of doctors. This can take form within CPD activities, and feedback/dialogue-based activities, for example in appraisal discussions and professional-development-plan development.

Andragogy is underpinned by the assumption that adult learners are self-directed and autonomous and lends itself to the concept of learners' readiness to learn based on their needs and goals, which places emphasis on the learners' active participation and the relevance of learning to real-life situations (Loeng 2018; Knowles et al. 2020). The principal theory that underpins andragogy is self-directed learning theory, proposed by Malcolm Knowles (Knowles 1977) which suggests that adults learn best when they take responsibility for their own learning, when they participate in the learning process, and when the learning is relevant to their life experiences and goals. (Hartree 1984; Knowles 1977; Akintolu and Letseka 2021; Loeng 2018) In practice this can mean employing strategies and designing activities that involve learner-centred activities, problem-solving, group discussions, and collaborative learning which allows the process to be more responsive to the unique characteristics and learning needs of the physicians. This can take the form of peer learning activities, case discussions, and multidisciplinary team-based learning, as well as reflective practice

activities which would entail doctors analysing their own experiences, evaluating their performance, and identifying areas for improvement which can lead to individualized learning plans.

Heutagogy expands on andragogy by placing even greater emphasis on learner autonomy and self-determined learning. (Kaushal et al. 2022; Blaschke 2019) It is underpinned by self-determination theory (Deci and Ryan 2015), transformative learning theory (Mezirow 1990a), and experiential learning theory (Kolb et al. 2000) which suggest that learners are self-determined individuals who take control of their learning journeys, can actively engage in the design and evaluation of their learning experiences, are capable of continuously adapting and responding to changing contexts, and that experience plays a central role in their learning process (Kolb and Kolb 2005; Mälkki 2010; Mezirow 1991) In practice this can mean employing strategies and designing activities that involve learner autonomy by putting learners in control of not only the learning process, but also the design and evaluation of their learning experiences, and encourage them to take responsibility for their learning, engage in critical reflection, and actively shape their learning experiences to meet their unique needs and goals. (Bednar, Cunningham, and Duffy 1992; Mezirow 1991; 1997; Taylor and Hamdy 2013; Cate, Kusurkar, and Williams 2011) This can take the form of learning-from-practice-and-experience activities embedded within reflective practice activities which would entail doctors reflecting on their clinical practice, patient interactions, and challenging cases. It can also be through encouraging doctors to embrace a mindset of continuous adaptation and ongoing learning, thus going beyond meeting their performance requirements and engaging them to actively seek opportunities for growth and improvement throughout their careers. Furthermore, it can encourage doctors to identify their learning needs, set their learning goals, and determine the strategies and resources through a more meaningful learner-driven approach to allows them to take ownership of their professional development and tailor their learning experiences to their specific interests and needs.

Transformative experiences and experiential transformations

Experiential and transformative learning theories offer an understanding of how adults respond to learning strategies, and activities, and can be used to influence practice for continuous improvement. (Kolb and Kolb 2005) Experiential learning theory (Kolb 1984) suggests that for learning to be effective, it should take form in a continuous cycle that involves four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. (Kolb 2015) This offers a meaningful structured approach for ongoing professional development and

learning of healthcare practitioners whereby knowledge and meaning are contextualised through experiences. (Kolb et al. 2000; Taylor and Hamdy 2013; Levinson and Holmboe 2011) In practice , this can be translated into: hands-on experience such as patient interactions, medical procedures/ cases (i.e.: concrete experiences), self-assessment, peer feedback, reflective observation (i.e.: reviewing patient outcomes in a critical and reflective manner to identify strengths, weaknesses, and areas for improvement), abstract conceptualisation (i.e.: expanding knowledge and understanding, and acquiring new skills through learning activities such as attending seminars, workshops, conferences to integrate their observations and experiences into abstract concepts and theories), and active experimentation (i.e.: promoting innovation, adaptation and development of good practice).

Reflective activities in particular can facilitate deep and transformative learning experiences for physicians and can lead to more meaningful cognitive and emotional changes. Such activities can stimulate motivation for long-lasting professional development, if they are designed in a way to invoke critical reflection, and can challenge assumptions and values, as underscored by the transformative learning theory underscores. (Mezirow 1990b; 1991; 1990a; Mälkki 2010) Critiquing the underlying assumptions and theoretical underpinnings from the studies affirms that through reflective activities, active learning, and when challenging physicians to critically and deeply reflect, they are able to develop a better understanding of the world, and of themselves, which creates opportunities to reposition, or change, their frames of reference (Mezirow 1990a; 1990b; 1997) and their perspective.

Socio-cognitive and psychological theories:

Cognitive dissonance and self-affirmation

Concepts put forward by cognitive dissonance theory (i.e.: inconsistencies or tension between one's beliefs, or between one's actions and one's beliefs, can result in discomfort from such 'dissonance' which leads to an alteration in one of the beliefs, actions, or behaviour to reduce the discomfort) (Festinger 1957) and by self-affirmation theory (i.e.: that individuals have a strong desire for a positive self-image, and are prone to uphold this positive view of themselves therefore if such view is threatened, individuals are motivated to affirm this 'integrity of the self') (Steele 1988) have permeated much of the reasoning for the design of physicians' behavioural and performance improvement activities identified in the studies. In the context of physician performance evaluation, cognitive dissonance can occur when physicians become aware of gaps

between their current practice and expected standards and/or best practices, for example, this can happen when they receive feedback or data demonstrating or implying suboptimal performance or areas for improvement. (McInerney and Green-Thompson 2017) This discomfort can prompt the physician to engage in self-reflection and take action to improve their performance thereby motivating them to address the inconsistencies between their current practices and the desired standards through seeking opportunities for learning and professional development to reduce the dissonance and enhance their skills.

The value of self-affirmation on the other hand can be harnessed in a number of ways in the context of performance evaluations, first, when physicians feel affirmed in their abilities, for example by acknowledging their accomplishments and contributions to patient care, they are more likely to approach performance evaluation and/or validation exercises as an opportunity for growth and learning, rather than a threat to their self-worth, which in turn can foster a more positive and growth-oriented attitude towards professional development. (Sherman et al. 2009; Taylor and Hamdy 2013) It can also be used to help physicians maintain their self-worth and self-esteem by providing them with constructive feedback that highlights their strengths and achievements thereby they become more receptive to addressing areas that require improvement. (Sehlbach et al. 2018b; Harris and Epton 2010) Understanding and leveraging cognitive dissonance and self-affirmation can therefore positively influence physician performance improvement activities by creating opportunities for motivation to engage them in continuous learning, self-improvement, and professional development.

Social learning systems

Theories emphasizing the importance of social interactions and observational learning in moulding human behaviour and performance, such as social cognitive theory (Bandura 1992) and communities of practice theory (Wenger 1998), offer an opportunity to recognise and appreciate the value of shared learning, collaborative problem-solving, professional identity development, and their contribution towards continuous professional development and growth. (Parboosingh 2002) This offers valuable understanding and insight into the complex social dynamics and learning processes that influence physicians' performance in healthcare settings.

Social cognitive theory underscores the importance of observational learning and self-efficacy in shaping behaviour (Monrouxe et al. 2022) -- in this case an attitude towards improvement. Observational learning can take place for example when physicians learn from their peers who

demonstrate exemplary skills and best practices; by observing such successful role models this can inspire physicians to adopt new approaches, refine their techniques, and enhance their performance. (Harris and Epton 2010; Bandura 1992) Self-efficacy on the other hand involves providing physicians with opportunities to succeed and recognize their achievements through, for example, offering constructive feedback which can assert their sense of agency, affirm confidence in their abilities, and motivate them to improve their performance. (Monrouxe et al. 2022; Bandura 1982)

Similarly, drawn from the communities of practice theory, which describes communities of practice as social groups composed of individuals who share a common domain of knowledge, engage in collaborative learning, and develop a shared identity (Wenger 1998), there's an emphasis on the significance of shared learning, knowledge exchange, professional identity development and collaborative problem solving in professional development and growth. (Monrouxe et al. 2022)
In practice this can take the form of case discussions and peer review activities, workshops, participation in knowledge sharing platforms, interdisciplinary collaboration, mentoring and peer support activities which can all nurture a collaborative learning culture where physicians can benefit from the collective wisdom of the community and find innovative approaches to improve their performance. (Cruess, Cruess, and Steinert 2018; Li et al. 2009; Parboosingh 2002; Amery and Griffin 2020) It can also promote continuous learning and improvement, and provide a supportive environment where physicians can find encouragement, feedback, and recognition from their peers, reinforcing their commitment to excellence.

6.2.3 Refined initial program theory and the context-mechanism-outcome configuration (CMO-C)

Ascertaining and unpacking underlying theories that explain various aspects of physicians' performance when interacting with evaluation processes paved the way to translate and coalesce this new knowledge to further inform the generative explanation for causation and the refined context-mechanism-outcome configuration. In this section, I define and delineate the 'context', 'mechanism', and 'outcome' components at play in the process of physicians' evaluation identified from the included studies (table 6.2) and catalogue what each 'context', 'mechanism', and 'outcome' refers to. This is followed by a representation of the synthesis of this tacit knowledge in the form of the context-mechanism-outcome configuration (CMO-C) (figure 6.2) in line with the running realist informed methodological thread for this thesis, to shed light on the contextual factors that influence mechanisms of change to produce outcomes.

Table 6.2: 'Contexts', 'mechanisms', and 'outcome' components at play in the process of physicians' evaluation identified from the included studies:

Reference	Contexts identified (C)	Mechanisms identified (M)	Outcome identified (**Io**: intermediate outcome & **O**: final outcome)
(Tazzyman, A. et al. 2019)	C: Type of assessment C: Supportive environment	M: Power dynamics	Io: Behavioral change
(Horsley, T. et al. 2016)	C: Type of assessment C: Type of Feedback C: Supportive environment		
(Cook, D. et al. 2016)		M: Reflection M: Self affirmation M: Denial M: Dissonance	Io: Game playing/tick boxing Io: Behavioural change Io: Creates/improves personal development plan
(van den Heuvel, H. 2008)	C: Type of assessment C: Supportive environment	M: Dissonance	Io: Game playing Io: Tick boxing
(Hagen, M. et al. 2006)	C: Type of assessment	M: Reflection M: Self affirmation	
(Levinson, W. and Holmboe, E. 2011)	C: Type of assessment C: Type of feedback C: Physicians response	M: Reflection M: Self affirmation M: Dissonance	Io: Behavioural change Io: Creates/improves personal development plan
(O'Neill, T. and Puffer, J. 2013)	C: Type of assessment C: Physicians response	M: Reflection	Io: Behavioural change Io: Creates/improves personal development plan
(Merkur, S. et al. 2008)	C: Type of assessment C: Physicians response C: Supportive environment	M: Reflection M: Self affirmation M: Dissonance	Io: Behavioural change Io: Creates/improves personal development plan
(Brennan, N. et al. 2017)	C: Type of assessment C: Physicians response C: Type of feedback	M: Reflection M: Self affirmation M: Dissonance	Io: Game playing Io: Tick boxing Io: Creates/improves personal development plan
(Lainhart, N. and Hagen, M. 2014)	C: Type of assessment C: Type of feedback	M: Reflection	Io: Behavioural change Io: Creates/improves personal development plan

	C: Physicians response C: Supportive environment		
(Walshe, K. et al. 2017)	C: Type of assessment C: Supportive environment C: Physicians response	M: Power dynamics M: Reflection	Io: Creates/improves personal development plan
(Archer, J. and De Bere, S. 2013)	C: Type of assessment	M: Reflection M: Self affirmation	Io: Game playing/tick boxing
(Guillemin, M. et al. 2014)	C: Physicians response	M: Reflection	Io: Behavioural change
(Gutacker, N. et al. 2019)	C: Type of assessment		O: Maintains performance O: Improves performance
(Tazzyman, A. et al. 2018)	C: Physicians response C: Type of feedback C: Supportive environment	M: Reflection M: Dissonance	Io: Game playing/tick boxing
(Tazzyman, A. et al. 2017)	C: Type of assessment C: Supportive environment C: Physicians response	M: Power dynamics M: Reflection M: Dissonance	
(Sehlbach, C. et al. 2018a)	C: Type of assessment C: Physicians response	M: Power dynamics M: Reflection M: Self affirmation	O: Maintains performance O: Improves performance Io: Behavioural change Io: Game playing/tick boxing

Source: Author

As seen in table 6.2, each study encompassed a variety of contexts, mechanisms, and outcomes at play in the process of physicians' evaluation. These were identified and selected based on relevance to the contribution to the program theory underpinned by the realist paradigm, and then classified. To remind the reader, 'Contexts' refers to the background features or circumstances that shape the mechanisms through which the intervention works, 'Mechanisms' refer to the processes that describes how the intervention produces change by explaining its impact on the physicians reasoning and their choices, and 'Outcomes' refers to the mixed pattern of outcome consisting of both intended and unintended consequences. Classified contexts (four) comprised of: 'type of assessment', 'type of feedback', 'physicians response' and 'supportive environment'; five mechanisms were elicited: 'reflection', 'self-affirmation', 'power dynamics', 'denial', and 'dissonance'; and three intermediate outcome: 'tick boxing', 'behavioural change', 'creates/improves personal development plan'; and two final outcome: 'maintains performance' and 'improves performance' were identified which are unpacked in detail below:

Contexts:

Type of assessment (C1): This includes:

- The assessment method, for example compulsory or voluntary. Compulsory require a formal review and/or audit to be undertaken for CME and CPD activities to be completed by physicians on a cyclical basis with potential consequences for non-compliance while voluntary systems do not require a formal process to be undertaken which often adopt a broad criterion for CME and CPD and are primarily geared towards self-assessments and promoting lifelong learning and professional development.
- The assessment format, for example exams, appraisals, workshops, peer/patient/multisource feedback, self-assessment and reflection, international conferences…etc.

Type of feedback (C2): The effectiveness and coherence of the feedback, for example if high quality feedback is received (i.e.: its meaningful, specific, and timely), it's more likely to trigger cognitive dissonance and reflection, whereas if feedback is superficial and incongruent, this can trigger denial and rejection.

Physicians' response (C3): This includes:

- How seriously the physicians engage with the assessment process which stem from the circumstances within which the assessment is undertaken – This context links to the method of the assessment itself (C1).
- The physicians' capacity and capability to undertake meaningful reflection and purposeful behaviour change.

Supportive environment (C4): This includes:

- Effective information governance systems, for example a health information infrastructure capable of collecting, recording, and analysing performance relevant data.
- Availability of knowledge brokers, i.e.: individuals who can provide operational communication and liaising between the doctors and their employers, as well as between the healthcare organisation and the regulator.
- The culture within which the regulatory intervention operates, for example, one that is intended to catch doctors out to discipline them, or one to identify poor performance early to improve and develop.

Mechanisms:

Reflection (M1): The process of critical, deep, and transformative personal consideration and deliberation which can trigger profound cognitive and emotional changes.

Self-affirmation (M2): The process of threatened self-image which triggers affirmation of the 'integrity of the self' stemming from individuals' strong desire to uphold a positive self-image.

Power dynamics (M3): The process of shifting from professional autonomy to regulated accountability as a result of strengthened performance surveillance which can trigger a feeling of being more scrutinized and a reduction in hierarchical differences amongst doctors.

Denial (M4): The process of refuting feedback and data presented triggering a disengagement with the process of evaluation and regarding it as irrelevant or invalid. This mechanism interacts and links with dissonance (M5) in that it can be subsequent to, or can take place prior to, cognitive dissonance.

Dissonance (M5): The process of discomfort or tension, which stems from discrepancy between the physicians' beliefs, attitudes, and/or behaviours, that triggers a change in those beliefs, attitudes, and/or behaviours to reduce the discomfort. This mechanism interacts and links with denial (M4).

Outcomes: Outcomes are divided into intermediate outcomes (Io) and final outcomes (O).

Game playing (Io1): Refers to strategically manipulating the process to present themselves in a more positive light thus not accurately reflecting true performance or abilities.

Tick boxing (Io2): Refers to superficially going through the motions of the process which lacks thoroughness, detail, or benefit thus not accurately reflecting true performance or abilities.

Behavioural change (Io3): Refers to modifying behaviours, practices, and attitudes that foster a growth mindset and promotes continuous development and improvement in skills and practices.

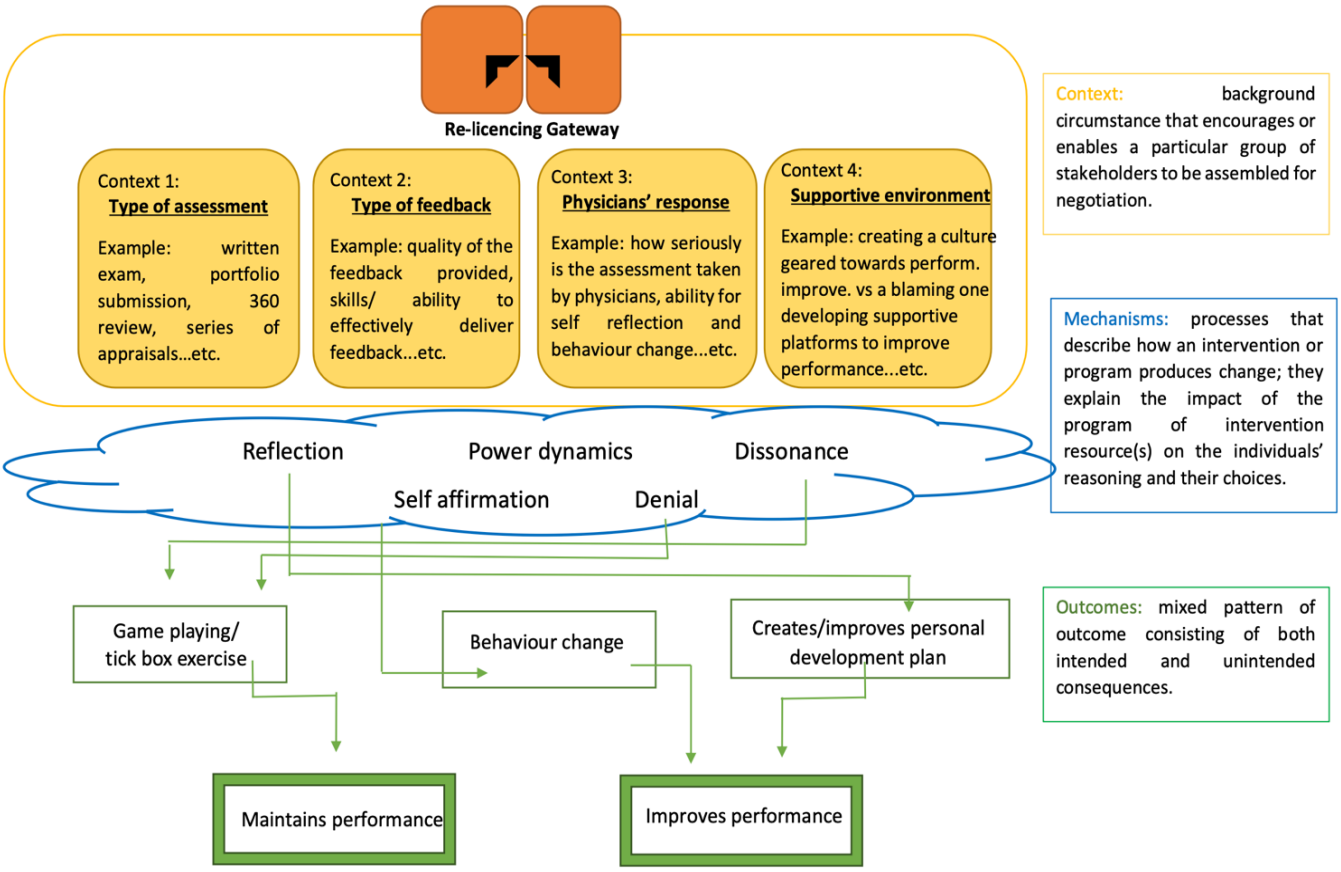
Creates/improves personal development plan (Io4): Refers to the development of, or improvement of existing, structured, and individualized plans, including identifying areas for improvement and specific goal setting, that supports professional growth and continuous development.

Maintains performance (O1): Refers to maintaining existing levels of performance.

Improves performance (O2): Refers to improving levels of performance.

Drawing from the synthesis of the interaction of the contexts, mechanisms and outcomes components of physicians' validation systems & regulatory interventions, and their relationship with physicians' performance it's clear that a variety of connections and pathways can be observed, which can be seen expressed below in the form of the context-mechanism-outcome configuration (figure 6.2).

Figure 6.2: Context-mechanism-outcome configuration (CMO-C)



Source: Author

These interactions provide explanations for the different outcomes produced, thus reasoning why interventions may, or may not work, in what contexts, in which ways, and circumstance. In other words, for each outcome identified, which mechanism, or group of mechanisms, could have caused it, and the context(s) within which this mechanism(s) was likely triggered. For example, behaviours that foster a growth mindset can be achieved (i.e.: intermediate outcome: behavioural

change) which can ultimately result in improvement of performance (i.e.: final outcome: Improves performance), if critical, deep and transformative reflection (i.e.: mechanism: reflection) is triggered by assessments that incorporate effective and coherent feedback that is meaningful, specific, and timely (i.e.: context :type of feedback) which was made possible by using relevant performance data (i.e.: context :supportive environment).

Considering this synthesized knowledge, the program theory therefore evolves into: medical relicensing can be theorised to be a gateway within which a variety of contexts are embedded; each having the potential to trigger various mechanisms which interact to produce different outcomes. Relicensing itself as a regulatory intervention has limited reach and scope if the background features that underpin and shape the mechanisms through which the intervention works are not designed in a way that enable and encourage improvement in performance. The close interaction between the contexts, mechanisms, and processes that produce change, warrant focus on the interplay between such factors as they have a direct, and substantial, impact on physicians' experiences and reasoning for their choices, and ultimately behaviours moving forward.

6.3 Discussion

I set out to appraise and analyse the broad and heterogenous data in the literature on physicians' validation systems, and regulatory interventions used to attempt to quantify physicians' performance in order to progress the understanding regarding how regulatory interventions, such as relicensing, can produce their effects. I then synthesized the analysed data, guided by realist methodological logic and principles, to inform the development of a preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance. The context-mechanism-outcome configuration produced crystallises the interactions between the various components at play in the process of physicians' performance assessment, which in turn informed the next stages of this PhD inquiry, particularly the semi structured interviews (chapter seven) and the modified Delphi study (chapter eight). The following are key reflections:

First, physicians' performance regulation sits within a complex backdrop of relationships and interactions between doctors, regulators, and the contexts within which they operate. This warrants any 'one size fits all' approach to instigate performance improvement amongst physicians naive and ineffective. While it is important to seek out best practices and appreciate how different methods influence change, context-specificity and context-sensitivity is imperative to address local concerns, needs and cultures. Context-specific here refers to interventions, guidelines, or practices

that are designed for a specific context or situation which take into account the particular population group or healthcare setting that may not be easily transferable to other contexts, while context-sensitive refers to the unique, dynamic, and often adaptable circumstances of the setting and the stakeholders functioning within it which recognize that decisions and interventions should be tailored to the specific needs, preferences, and circumstances -- the main difference between context-specificity and context-sensitivity is the scope of applicability and adaptability.

It's also important to recognise and appreciate that the underlying motivations for physicians' performance regulation are multiple, this includes professional accountability, accountability to the public, health system sustainability, efficiency, and effectiveness. This means that understanding, and balancing, these motivations, and the interests of the multiple stakeholders and beneficiaries involved, should be central to the design and development of evaluation activities if validation systems are to be expected to bring about meaningful change and improvement.

Secondly, learning and development is a process, rather than a discrete event. It's based on, and requires, cognitive, behavioural, and social scaffolding as well as galvanising a sense of agency in the physicians to enable meaningful progress which is relevant and sustainable. Carefully crafting and diversifying assessment modalities and structural designs has the potential of not only evaluating and capturing performance data that is as closely representative as possible to their actual performance, but also create opportunities to engage in continuous learning, and promote life-long self-improvement and professional development.

Lastly, physicians' validation systems and regulatory interventions used to attempt to quantify, and ultimately improve, physicians' performance should be considered as a single cog in the vast machinery of healthcare quality improvement. Such regulatory interventions, even if designed purposefully and comprehensibly, can only stimulate, and support, meaningful impact if other components of health system apparatuses, such as governance, health information systems, and the overall professional culture, enable and encourage such a trajectory.

6.4 Strengths and limitations

The strength of this study that informed the evidence generation and synthesis discussed here, the scoping review, primarily lies in the use of a critical interpretivist approach to chart the data, and the realist logic to synthesise evidence, which allowed for an iterative and dynamic approach to data selection, and critical scrutiny in questioning the underlying assumptions and theories within the literature in a recursive and reflexive manner. This enabled a deep dive into the causal

mechanisms at play in the health workforce performance evaluation process and explained physicians' performance at a much more granular level to expose further insights and better understanding of how physicians' performance can be impacted by regulatory interventions. However, much of this work is descriptive, and gaps remain in terms of strong evidence-based connections between improved patient outcomes, quality of care provision, or safety, and causal links are yet to be established. This study is also limited by the scarcity in the literature on relicensing specifically, which meant that the search scope was expanded to include revalidation, medical appraisal, and recertification. It's also relevant to note that all the validation system discussed in the published literature are situated within high income settings in the global north. Further specificity regarding how different regulatory interventions produce their effects in a broader variety of health system settings is warranted, so is a more distinct understanding of the impact of each individual regulatory intervention.

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In this chapter I appraised and analysed the literature on physicians' validation systems, and regulatory interventions used to attempt to quantify physicians' performance, which I then synthesized, to inform the development of a preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance. I specifically explored the theoretical underpinnings and the body of evidence around how physicians' performance regulatory interventions work, such as medical relicensure and variations of it, and in what way they produced their effects. This chapter is informed by the results from the scoping review on medical relicensure which formed the basis for the development of a preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance, and in turn informed the next stage of this PhD inquiry, particularly the semi structured interviews (chapter eight). The findings can also be used to inform future exploratory studies into health system governance, particularly those focusing on the impact of health workforce interventions, and the role of socio-cognitive, learning & education, and psychological theories in the structural design of physician assessment.

In the next chapter I appraise and analyse the literature on primary care physicians' performance assessment, with a particular focus on how individual primary care physicians' performance is evaluated globally, I ascertain how primary care physicians' performance is reported in the literature, and identify meaningful, actionable information in the form of metrics for primary care

physicians' performance assessment. This next chapter is informed by the results of the systematic review on primary care physicians performance assessment.

CHAPTER 7: PRIMARY CARE PHYSICIANS' PERFORMANCE ASSESSMENT

7.1 Introduction

Physicians' performance is defined differently across the globe, (Diallo et al. 2003) which has led to little consistency in terms of how human-resource-for health strategies related to individual level performance are monitored and evaluated. In the literature, broad variations exist in terms of the methods and metrics used to attempt to measure and evaluate health workers' performance. (Leonard et al. 2015; Scheffler 2012; Overeem 2012; Overeem et al. 2007) This variation within the literature regarding methods and metrics to measure and evaluate health workers' performance therefore warranted the use of a structured methodological approach suitable to examine, appraise and summarise the evidence which a systematic review was well equipped to do.

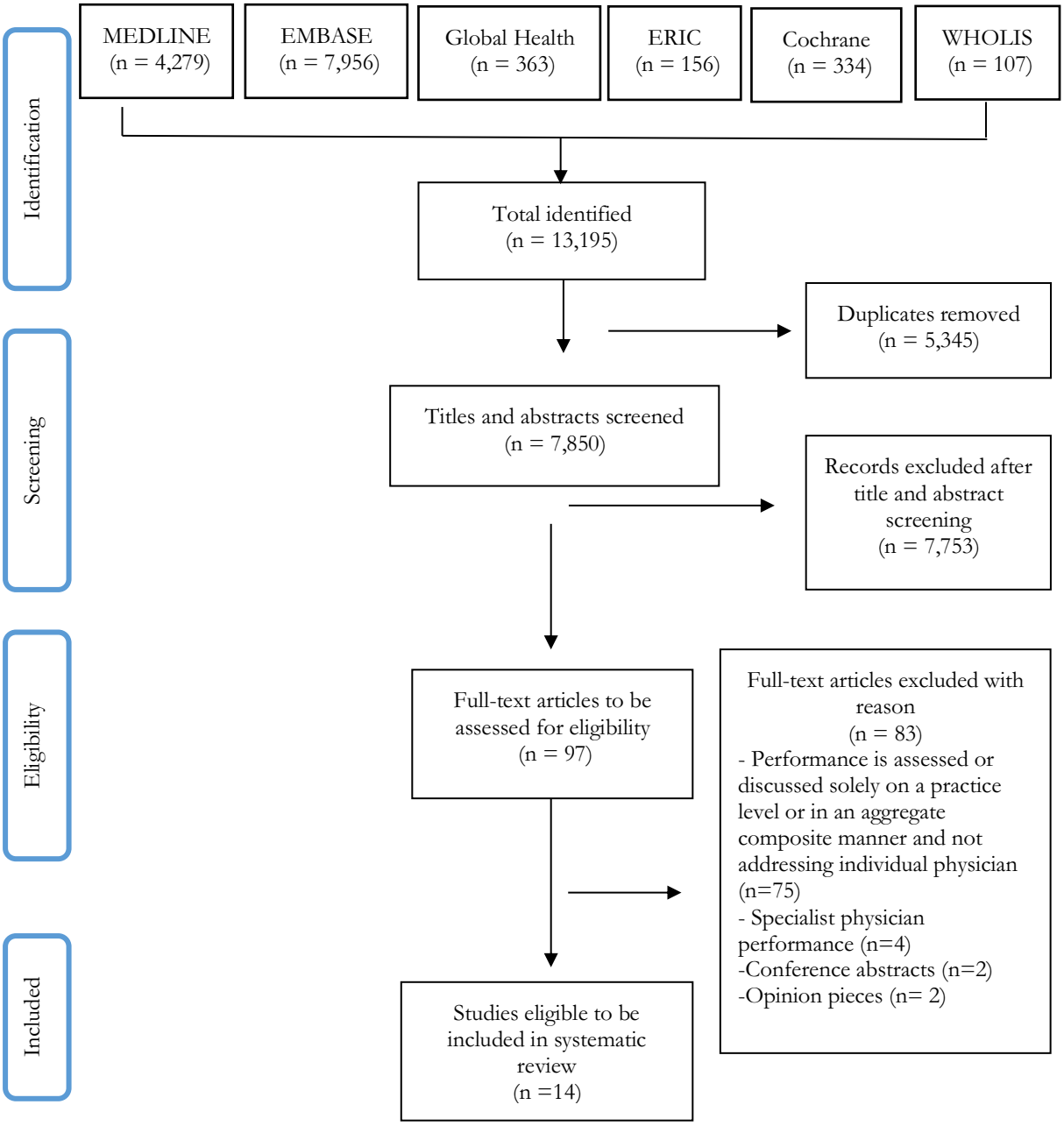
The objectives of the systematic review were therefor to: 1) Ascertain how primary care physicians' performance is reported in the literature, 2) Investigate how various instruments used to assess physicians' performance produce their effect(s), and 3) Identify meaningful, actionable information and data in the form of metrics for primary care physicians' performance assessment which can be used to improve performance and engage in transformative learning. The systematic review process that informed this chapter comprised of seven fundamental stages: 1) Identifying the research questions, 2) Defining the inclusion and exclusion criteria, 3) Identifying relevant studies, 4) Study selection, 5) Data extraction, 6) Quality assessment, and 7) Data synthesis and presentation of results. (Gough, Oliver, and Thomas 2017) Inclusion criteria focused on primary care physicians, and the interventions of interest were those that aimed to quantify and/or evaluate physicians' performance. Studies discussing general clinical performance or practice performance measure (not relating to the individual physician) were not considered, and studies that did not clearly describe how physicians' performance was defined and/or measured were also excluded.

7.2 Results

Searches in databases MEDLINE, EMBASE, Global Health, ERIC, Cochrane Library and WHO Library and Information Network for knowledge database (WHOLIS) resulted in retrieval of 13,195 records, 5,345 of which were duplicates. Following the screening of title and abstracts, 7,753 were further removed. Screening of the remaining full texts further resulted in 84 records removed, subsequently deeming 14 eligible records to be included in this systematic review (figure 7.1). The screening of titles and abstracts was undertaken by two reviewers (SH and OE), and screening of full texts, quality appraisal and data extraction was undertaken by one reviewer (SH).

Data was extracted from the included studies using a data extraction form designed to correspond to the research questions of the study and fulfil its objectives. The form was completed in a Microsoft Office Word document for each of the studies, and an overall summary of the included studies, risk of bias assessment, and key data was produced (table 7.1). Endnote x10 bibliographic software package was used to manage the records and filter through citations and full texts, and the Mixed Methods Appraisal Tool (MMAT) for reviews (Nha Hong et al. 2018) was used to assess the risk of bias of the included studies.

Figure 7.1: Systematic review PRISMA Chart



Source: Author

Dates of publications ranged from 2003 to 2018. Country of the publication origin (defined as that of the primary author affiliated institution) included the Netherlands, Sweden, the United Kingdom (UK), the United States of America (US), Canada, and Australia. Of the included fourteen studies, five examined performance exclusively in the UK, two in Canada, three in the US, one in Sweden, one in Australia, and two comparatively in a number of European countries (table 7.1).

All studies discussed individual level performance of primary care physicians', whether as part of a broader organisational and structural assessment of primary care or specifically focusing on physician level evaluation, and all study populations included primary care doctors in practice. Thirteen of the fourteen included studies were non-comparative descriptive or observational studies, and one was a randomised comparative study. There were six cross sectional studies, five qualitative studies (semi-structured interviews, and focus groups), one Multivariate regression, one Delphi study, and one randomised comparison study. Study quality was mixed; nine were graded as moderate to high quality and five graded as moderate quality-- most studies scoring between four-six (out of seven) according to the MMAT quality domains.

Table 7.1: Summary of included studies extracted data

Ref	Title	Type of study/ Study population	Study objectives	Country /Setting	Data corresponding to research study objective*
(Exworthy, M. et al. 2003)	The role of performance indicators in changing the autonomy of the general practice profession in the UK	Qualitative study (semi-structured interviews) (29GPs interviewed)	To assess the feasibility of deriving a set of evidence-based cardiovascular and stroke performance indicators in one primary care group and the views on, and reactions to, these PIs by members of the primary care team To elicit the meaning GPs attach to PIs and how they may affect GPs' autonomy.	UK	Ob2: Clinical PIs were perceived to instigate loss of autonomy. Many GPs claimed that general practice invalidated the applicability of clinical PIs and expressed strong objections.

(Glenngård, A. 2013)	Is patient satisfaction in primary care dependent on structural and organizational characteristics among providers? Findings based on data from the national patient survey in Sweden	Survey (135,300 respondents)	To analyze variation in patient satisfaction, with respect to organizational of primary care. To discuss the results with respect to the provider's ability to control information about the performance generated through survey tools and potential dilemmas in the achievement of various objectives of primary care	Sweden	Ob1 & Ob3: Patient satisfaction metrics including responsiveness (Did you participate in decisions regarding your care and treatment as much as you wanted?), quality (Was your need of care adequately taken care of?), overall sasifaction Was your need of care adequately taken care of?
(Sargeant, J. et al. 2011)	How do physicians assess their family physician colleagues' performance? creating a rubric to inform assessment and feedback	Qualitative study (focus groups). 2 focus groups (11 and 12)	*To determine how physicians make decisions about performance ratings for family physician (FP) colleagues in the 5 practice domains.*	Canada	Ob1&Ob3: metrics used include: *consultation communication, patient interaction, professional self-management, clinical* competence *, and psychosocial management of patients.*
(Kringos, D. et al. 2018)	Re-thinking performance assessment for primary care: Opinion of the expert panel on effective ways of investing in health	Literature review followed by expert panel report	To provide an overview of domains and dimensions to be taken into consideration in assessing primary care and specific indicators to be collected and analysed to improve understanding of primary care performance.	European commissi on countries	Ob1&Ob3: metrics identified include: professional activities: being responsive for bio-psychosocial needs of patients, building relationships and continuity with patients, coordination of chronic care, and making sure that no one is left behind.
(Scott, I. ey al. 2011)	Assessing individual clinical performance: a primer for physicians	Literature review followed by expert advisory	To identify factors contributing to acceptability and applicability of	Australia	Ob1&Ob3: Metrics domains identified include: Clinical expertise, clinical decision-

		group report	individual clinical performance performance assessment inform future debate both within and outside professional circles.		making, teaching and learning, communication, professionalism, leadership and management, health advocacy, collaboration and teamwork.
(Parkerton, P. et al. 2003)	Physician performance assessment: non-equivalence of primary care measures	Cross sectional study (194 family practioners)	To determine the consistency and reliability of 4 measures of primary care physician performance measures: cancer screening, diabetic management, patient satis-faction, and ambulatory costs.	US	Ob1 &Ob3:Each performance measure was significantly related to 1 or 2 of the other measures. Assess ments of individual physicians with current performance measures can identify areas in which improvement is needed and to provide feedback to improve performance quality and efficiency, however, assumptions should not be made from one measure of performance to another.
(Foot, C. et al. 2010)	The quality of GP diagnosis and referral	Literature review followed by expert advisory group report	To identify evidence-based means of improving the quality of GP diagnosis and referral, and to consider the potential for quality measures of diagnosis and referral within primary care.	UK	Ob1 & Ob2: There is scope for quality measurement in diagnosis and referral, but most indicators will serve only as 'tin openers' rather than 'dials'. Referral rates are an important example of this, and primary care trusts should be strongly discouraged from using overall referral rates as a

					performance management measure.
(Engels, Y. et al. 2005)	Developing a framework of, and quality indicators for, general practice management in Europe	Two-round postal Delphi questionnaire (6 expert panels with 10 participants each)	To develop a common framework and set of indicators of practice management, which is applicable across several European countries.	Belgium, France, Germany, The Netherlands, Switzerland and the UK	Ob1&Ob3: Metrics related to individual level performance include: Involvement in quality improvement activities (there was virtually no agreement on clinical audits, having a critical incident registration, and involving patients/ a complaint procedure)
(Seattle, W. and Care, A. 2006)	Benchmarking Physician Performance: Reliability of Individual and Composite Measures	Administrative data from 9 health plans representing more than 11 million patients.	To examine the reliability of quality measures to assess physician performance, which are increasingly used as the basis for quality improvement efforts, contracting decisions, and financial incentives, despite concerns about the methodological challenges.	US	Ob1&Ob3: Most quality measures require at least 50 quality events per physician to gain a reliable estimate physician performance (ie, to ensure that a quality measure is able to distinguish a physician's performance from average performance). Composite measures allow more physicians to be evaluated reliably but are less actionable for quality improvement.
Wenghofer, E. et al. 2009)	Factors Affecting Physician Performance: Implications for Performance Improvement and Governance	Multivariate regression analyses of data from 532 GP/FPs randomly selected for peer assessments conducted between	To assess how physician, organizational and systematic factors affect family physicians' performance.	Canada	Ob1&Ob3: Individual competence remains a crucial prerequisite for high performance -- on dimensions such as chronic care and continuity of care, results suggest that quality improvement

		1997 and 2000			initiatives should also consider organizational and systemic factors because physician factors appear to have less impact on performance in these dimensions. (e.g., organizational performance incentives or professional governance) rather than an exclusive reliance on the CPD of individual practitioners as the panacea for performance improvement.
(Glyn, E. et al. 2005)	Using a 'peer assessment questionnaire' in primary medical care	Cross sectional survey (1189 GPs)	To test the feasibility of using a peer assessment questionnaire in a primary care setting, consider validity and reliability, and compare the results to previous findings.	UK	Ob3: use of peer assessment questionnaires appears feasible and may be acceptable to clinical practitioners.
(Burt, J. et al. 2018)	The evaluation of physicians' communication skills from multiple perspectives	Analysis of survey data from patients attending face-to-face appointments with 45 family physicians at 13 practices in England.	To examine how family physicians', patients', and trained clinical raters' assessments of physician-patient communication compare by analysis of individual appointments.	UK	Ob1 & Ob3: lack of correlation between physician scores and those of others indicates that physicians' perceptions of good communication during their appointments may differ from those of external peer raters and patients.

(Bruce, D. et al. 2004)	Revalidation for general practitioners: randomised comparison of two revalidation models	Randomised comparison of two revalidation models. (53 GPs)	To compare two models of revalidation for general practitioners.	UK	Ob3: Information collected and used to assess performance across both models included management plan illustrating the care of a patient with chronic illness (the Criterion model), and observation of five consultations with colleague, case report from a consultation, and patient satisfaction survey (the Education outcome model) Ob2: Both models were developed by general practitioners (plus key stakeholders), enhancing ownership.
(Fenton, J. et al. 2017)	Reliability of Physician-Level Measures of Patient Experience in Primary Care	Repeated cross section study	To assess the impact of unmeasured patient characteristics on visit-level patient experience measures and the sample sizes required to reliably measure patient experience at the primary care physician (PCP) level.	US	Ob1 & Ob3: Widely used methods for measuring PCP-level patient experience may not account sufficiently for influential patient characteristics.

Source: Author

*Research study here refers to the systematic review study. Objectives 1-3 are as follows:

Ob1(Objective 1): Ascertain how primary care physicians' performance is reported in the literature

Ob2 (Objective 2): Investigate how various instruments used to assess physicians' performance produce their effect(s)

Ob3 (Objective 3): Identify meaningful, actionable information and data in the form of metrics for primary care physicians' performance assessment which can be used to improve performance and engage in transformative learning.

7.3 Findings

I set out to ascertain relevant and applicable data pertaining to primary care physicians' performance assessment, in order to develop a better understanding of how performance is measured and evaluated on the individual physician level from a primary care perspective. In this section, findings are organised under three main categories which respond to the systsematic review study research questions, which in turn aligns with the first objective of the PhD and related research questions, as mapped out earlier (chapter 5, figure 5.1). These are:

- Reporting of primary care physicians' performance
- Metrics for primary care physicians' performance assessment
- How various instruments used to assess primary care physicians' performance produce their effect(s)

7.3.1 Reporting of primary care physicians' performance

The evaluation of physicians performance has been an evolving field for a number of years (Hanson 2008; Rhee, Lyons, and Payne 1978; Wenghofer et al. 2009; Lau et al. 2015; Overeem et al. 2012; Overeem et al. 2007), with much of the recent focus geared towards measures of what doctors actually do in practice (ie: performance based approach), versus what they can do in controlled settings (ie: competency based approach). (Rethans et al. 2002; Holmboe 2008; Miller and Archer 2010; Saedon et al. 2012) However, progress has been slow to underpin measures and metrics for performance evaluation, particularly on the individual level. This is because competency-based approaches are more straightforward to assess, as compared to performance based approaches (Schartel and Metro 2010; Epstein and Hundert 2002; Panzarella and Manyon 2007; Nash et al. 1993), given that the latter requires accounting for the dynamic and changing context physicians operate in, and the myriad of variables influencing day-to-day practice , such as time-pressures, limited resources, and patient and public demands, which are challenging to quantify in an equitable manner.

Studies included in this systematic review (Kringos et al. 2018; Wenghofer, Williams, and Klass 2009; Exworthy et al. 2003; Foot et al. 2010) have identified additional challenges which are more pertinent to the primary care setting. These include the complexity of care pathways, the broad scope of practice in primary care, the complex nature of the field (for example: diagnostic processes and referral pathways), and the culture (for example autonomy) which have been seen to impede the process of capturing accurate and clear individual-level performance data. Further

challenges including feasibility (Exworthy et al. 2003; Parkerton et al. 2003; Glyn et al. 2005), reliability (Scholle et al. 2008), consistency in deriving evidence-based indicators to authentically reflect individual level performance (Parkerton et al. 2003), as well as factors contributing to acceptability and applicability of individual clinical performance assessment were also highlighted.

The landscape for reporting of primary care physicians' performance is muddled with a lack of clarity in respect to the extent to which metrics actually contribute to domains and/or dimensions for individual assessment. One of the principal reasons for this ambiguity is that measurements that currently exist often take a broader view of the structural and organisational considerations of primary care as a whole (Kringos et al. 2018; Engels et al. 2005) which means it's difficult to delineate individual-based dimensions from practice -based ones. Foot et al, for example, referred to how indicators would often only serve as: "tin openers" (i.e.: designed to stimulate additional & further investigation) rather than "dials" (i.e.: clear, unambiguous markers of performance) such as in the example of referral rates. (Foot et al. 2010) None the less, what's been seen across studies is that performance assessment methods are still being used to attempt to quantify or evaluate individual level performance, either implicitly or explicitly.

Implicit methods include metrics such as cancer screening, diabetic management, and ambulatory costs (Engels et al. 2005; Kringos et al. 2018; Parkerton et al. 2003) which are often used as proxies for performance, however they're not quite beneficial in reflecting actual individual based information. Explicit measures on the other hand are those that quantify individual based information more specifically, and these can be largely categorised into either direct or indirect methods of assessment. Direct assessment methods are those that evaluate actual, or ongoing, practice in the real-world clinical settings. It involves methods like obtaining multi-source feedback, maintaining evidence-based practice logs or portfolios, conducting mini-clinical evaluation exercises, analysing significant events, recording clinical interactions on video, and conducting patient satisfaction interviews or surveys. On the other hand, indirect methods include knowledge, skill, and reasoning tests, high-fidelity simulation exercises, or questionnaire surveys, however, as mentioned previously these methods may not accurately reflect physicians' daily clinical practice setting and are not as dynamic or capricious as real-world settings. (Glyn et al. 2005; Wenghofer et al.2009; Engels et al. 2005; Scholle et al. 2008; Foot, et al 2010; Scott et al. 2011; Kringos et al. 2018; Sargeant et al. 2011; Glenngård, 2013; Exworthy et al. 2003; Bruce et al. 2004; Burt et al. 2018; Fenton et al. 2017)

7.3.2 Metrics for primary care physicians' performance assessment

As mentioned earlier, implicit, or explicit measure to assess primary care physicians were identified in the studies-- in this section I focus on explicit measures, both direct and indirect, given that they are more closely aligned to actual individual level performance, as compared to implicit measure, and are used to evaluate actual, or ongoing, practice in the real-world clinical settings.

Multi-source feedback (MSF) emerges to be the most common element in most assessment review processes identified in the studies (Scott, Phelps, and Brand 2011; Fenton et al. 2017; Glyn et al. 2005; Engels et al. 2005; Kringos et al. 2018; Sargeant et al. 2011; Glenngård 2013; J Burt et al. 2018) which is unsurprising given that MSF features quite prominently as a principal method for assessment of individual level performance in other medical specialities, beyond primary care. (K Overeem et al. 2010) MSF is essentially feedback from colleagues, peers, and patients, which is often collected in the form of a survey, but sometimes in the form of interviews, using tools such as the mini-assessment tool (mini-PAT) (Archer et al. 2008), the patient satisfaction questionnaire (PSQ), and team assessment of behaviours (TAB). (Whitehouse et al. 2015) It's sometimes referred to as 360° assessment. MSF is feasible, does not require high tech or complex health information systems, and can be administered easily which are some of the reasons why it's commonly used, however, in practice , evidence suggests that there is a mixed picture in terms of their reliability, validity and effectiveness (Whitehouse et al. 2015; Beard 2011; Wilkinson et al. 2008) MSF is considered a type of workplace-based assessment (Swanwick and Chana 2009), which amongst other assessment in the same category (for example: observation of clinical activities and clinical/case-based discussions with peers) aim to evaluate performance using a more supportive and developmental approach by means of feedback to improve and progress practice . (RCGP 2022; Miller and Archer 2010)

Other measures identified in the studies which fall under workplace-based assessment include video observation or assessment of recording of clinical interactions on video, maintaining evidence-based practice logs or portfolios, conducting mini-clinical evaluation exercises, and analysing significant events, which have also been used in other medical specialities across the board. (J J Norcini et al. 2003; Wilkinson et al. 2008; Miller and Archer 2010; Beard 2011)

Additional direct measures identified include communication, professionalism, leadership and management, health advocacy, and collaboration and teamwork. (Scott, Phelps, and Brand 2011; Kringos et al. 2018; Sargeant et al. 2011; Bruce et al. 2004; Burt et al. 2018; Engels et al. 2005) 'Communication' focuses on the proficiently in communicating with patients, their families,

colleagues, healthcare teams, and even the wider community regarding patient care as well as broader population health—this is closely linked to MSF and is embedded as an element within it. 'Professionalism' is about ethical conduct and upholding accountability to patients, the medical profession, and society more widely. 'Leadership and management' are concerned with establishing high practice standards, and advocating safety and quality of care. And finally, 'collaboration and teamwork' consider the physicians' abilities and skills in information exchange, collaborative work, and the active engagement within clinical teams.

Indirect methods encompass elements such as knowledge, skill, and reasoning tests, and simulation exercises, however, as mentioned previously these methods may not accurately reflect physicians' daily clinical practice setting and are not as dynamic or changeable as is the case in a real-world setting. Areas assessed in these respects include assessment of clinical expertise and proficiency (for example: integrating and applying knowledge, competencies, and attitudes) and clinical decision-making (for example: employing effective modes of reasoning in diagnosing, managing, and foreseeing clinical scenarios). (Scott, Phelps, and Brand 2011; Scholle et al. 2008; Wenghofer et al. 2009)

7.3.3 How various instruments used to assess primary care physicians' performance produce their effect(s)

Only three out of the fourteen studies included details regarding how the reported instruments or metrics used to assess primary care physicians' performance produce their effects. (Foot et al. 2010; Bruce et al. 2004; Exworthy et al. 2003) Both Foot et al. and Bruce et al. addressed the same component which is the positive impact that physicians' agency and ownership has on the uptake, and buy in, for the performance assessment process, and the seriousness by which the procedure is undertaken, if they [physicians] are meaningfully involved in the process of performance measurement and indicator development. In the same vein, Exworthy et al. describes the opposition and objection conveyed, particularly for 'imposed' clinical performance indicators, by primary care physicians which stemmed from their perception of loss of autonomy. These findings bring to the foreground the relevance, and significance, of the consultative and conferring approach to performance measurement development, particularly for the primary care context, if buy-in is to be achieved.

7.4 Discussion

I systematically identified relevant and applicable data pertaining to primary care physicians' performance assessment in order to develop a better understanding of how performance is

measured and evaluated on the individual physician level from a primary care perspective. The new knowledge elicited from the systematic review discussed in this chapter informed the development of the preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance, particularly components embedded within the context configuration, which in turn informed the next stage of this PhD inquiry. The following are key reflections:

Evaluating individual physicians' performance has proved to be quite a challenge, and the methods, and metrics, to measure and evaluate health workers' performance vary across the board rendering robust evidence on the validity and reliability of performance indicators scarce. Using primary care as an area of focus, it was clear that due to the complexity of diagnostic and referral pathways, and the multitude of influencing factors affecting it, that assessing individual physicians based on narrow performance measures can be misleading and misrepresentative, and that traditional approaches such as standardisation should be discouraged. It was also clear that it's difficult to delineate individual-based dimensions from practice -based dimensions. This does not mean that the endeavour towards meaningfully evaluating performance on the individual level should be forfeited, but rather that the approach to individual level performance evaluation should be sensitive to the myriad of factors influencing it, and that investments should be made to improve data availability and linkages capabilities. This also means that the challenges associated with validity and reliability of data, confounding, robustness, sensitivity, and specificity of metrics should be addressed. Some measurements that appeared to be more applicable for use were explicit measures, particularly direct ones, given that they are more closely aligned to actual individual level performance, compared to implicit measure, and can be used to evaluate actual, or ongoing, practice in the real-world clinical settings.

It is therefore advised that, until more robust evidence, particularly related to the validity and reliability of measurements, is available, performance indicators should be considered with caution if they are to be used for profiling or for accountability purposes. It's also advised to use multiple assessment methods, and include a variety of data sources to mitigate challenges related to content specificity, bias, and data inaccuracies considering that using several different assessment methods, even if they are not highly standardized, is likely to provide a more accurate overall picture of performance compared to relying on a small number of highly standardized methods that may be fraught with methodological biases, confounding and inaccuracies.

7.5 Strengths and limitations

To the best of my knowledge this is the first study attempting to ascertain how primary care physicians' performance is reported, and identify meaningful, actionable information and data in the form of metrics for primary care physicians' performance assessment which therefore adds specific insights into this area of performance assessment. The strength of this study lies in the use of a systematic approach to identify, evaluate, critically appraise, and extract the data which lead to a robust approach to data selection, and synthesis. However, it was clear from the scarcity of the literature specifically focusing on individual-level performance, compared to practice -level, that research remains to be limited in respect to ability, and perhaps the capability of researchers, to delineate individual-based dimensions from practice -based ones. Furthermore, much of this work is descriptive, and gaps still exist in terms of correlation between individual-level performance assessment and improvement in care provision.

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In this chapter I appraise and analyse the literature on primary care physicians' performance assessment, with a particular focus on how individual primary care physicians' performance is evaluated globally. I ascertain and unpick how primary care physicians' performance is reported in the literature, and identify meaningful, actionable information in the form of metrics for primary care physicians' performance assessment. I also systematically identify relevant and applicable data relating to primary care physicians' performance assessment approaches on the individual level.

This chapter is informed by the results of the systematic review on primary care physicians performance assessment. The findings from the systematic review that informed this chapter have a range of potential implications and applications, including informing the next phase of this PhD inquiry, in particular, the variations in terms of inputs for the contexts, mechanisms and outcomes components of physicians' validation systems & regulatory interventions, which in turn informed the basis for the development of the preliminary conceptual framework postulating how medical relicensing is expected to affect physicians' performance. The findings can also be used to inform future exploratory studies into primary care physician performance assessment, particularly those focusing on the role of individual-level approaches, and their role within larger, system-level, performance methods.

CHAPTER 8: MEDICAL RELICENISNG CONSIDERATIONS FOR THE EGYPTIAN HEALTH SYSTEM

8.1 Introduction

The semi-structured interviews were utilised to elicit key knowledge regarding medical relicensing in Egypt. More specifically, the semi-structured interviews served the purpose of exploring the process medical relicensing in expected to undertake in Egypt, and to understand the dynamics, and influences, between this soon-to-be implemented intervention, the health system features, and the workforce. I aimed to capture comprehensive and detailed information regarding the shape relicensing is expected to take, the preparation underway for relicensing, and how it's expected to affect the performance of physicians in Egypt. The finding from the semi-structured interviews were used to refine the program theory and to further develop the CMO-C, which would later be tested through consensus with experts using a modified Delphi study; the method of which is explained in the methods chapter (chapter five). The interviews were also used to confirm findings from the literature and uncover any gaps in understanding and/or knowledge that can lend themselves to the recommendations for the overall research project. More specifically, the objectives of the study were to: 1) Confirm knowledge regarding the medical regulation landscape in Egypt, 2) Gauge the level of consistency in terms of understanding of experts regarding current preparation for relicensing in Egypt, and the shape relicensing is expected to take, and 3) Identify key considerations that will form the basis of a preliminary conceptual framework postulating how relicensing is expected to affect the performance of physicians in Egypt. At an earlier stage, prior to this study, evidence generation and synthesis through literature and scoping reviews informed the background understanding regarding medical re-licensing as an intervention (i.e.: how it's expected to influence better performance to produce its effects? What lessons can be drawn from similar interventions globally?), and the current medical licensing system in Egypt) which informed the development of the semi structured interview questions and guide (appendix 6).

8.2 Results

Out of the 20 participants contacted, 12 were interviewed. Data saturation, defined as the point in which no new information in data collection and analysis address the research question (Guest, Bunce, and Johnson 2006; Birks and Mills 2015; Glasser and Strauss 1967), was reached by the ninth interview, however all twelve scheduled interviews were conducted to warrant comprehensiveness. Table 8.1 outlines the characteristics of the participants who comprised leaders in the fields of health workforce, with a particular focus on medical education, training,

capacity building and/or regulation, and those who are/have been involved in the process of relicensing in some capacity.

Table 8.1 Characteristics of participants:

Participants	Number
Total	**12**
Affiliation	
Academia	3
International organisation	2
National Institution	7
Expertise	
Medical education	3
Capacity building (Health workforce development and training)	5
Governance (Medical regulation and accreditation)	2
Quality of care	2
Organisation type	
Governmental	6
Non-governmental	2
Health services	2
Research	2
Position	
Director	2
Senior consultant/Advisor	6
Junior consultant	2
Trainee	2
Gender	
Female	8
Male	4

Source: Author

Participants' tenure and experience ranged from 5-35 years, which meant that participants were able to provide a wide-ranging narrative, in terms of their perceptions and viewpoints, regarding the effects of this policy intervention across the tiers of the health system. Clinicians currently undergoing speciality training, who are expected to be the first cohort to undergo medical

relicensing, were also included for an inclusive approach to opinions, ideas, and considerations for improvement.

Three themes and six subthemes were abstracted from the data set. Table 8.2 presents an ordered overview of the themes and subthemes generated from the framework analysis. As discussed in further detail in the methods chapter (chapter five), the approach for thematic analysis of the interview data was undertaken using the six-step process.

Table 8.2 Themes and subthemes:

Theme	Subtheme
1. Relicensing configuration	Guiding principles
	Features
2. Operational climate	Command and control considerations
	Health System boundaries
3. Taking relicensing forward	Acceptability and adoption
	Preparedness and readiness

Source: Author

Theme abstraction was done inductively and deductively, and codes were used to classify and manage the data as presented in the transcribed interview text, which were organised in an analytical framework. This was followed by codes being grouped into clusters of similar and interrelated concepts to form categories, then deduced and abstracted into subthemes and themes. An example of the clustering and abstraction process can be found in appendix 7. In the next section I describe and examine each theme, and related subthemes, in detail.

Theme 1 Relicensing configuration

Given the uncertainty regarding the structure and format of medical relicensing in Egypt, it was unsurprising that participants had various, and inconsistent, understanding of what the components of relicensing will be, and how the roll out will take form. The emergence of a theme specifically pertaining what participants understood was the 'make-up' of this new policy intervention was a likely outcome, which warranted clarity and depth of understanding. Two distinct areas, or subthemes, featured in the data within this theme; one primarily addressed the principles underpinning medical relicensing in Egypt, and the other relating to the specific features and characteristics of medical relicensing.

Subtheme 1: Guiding principles

Participants across the board repeatedly reported the dire need for an 'independent body' that oversees the continuous professional development and education of practising Egyptian doctors, and that the *"lack of assessment of practice at any point in time in medical careers…[I mean] the license for life" (P2)* is no longer fit for purpose.

Many participants discussed the value relicensing as an intervention ought to engender, which participants frequently expressed as primarily to enhance the safety and quality of practice and introduce a gear-change towards active learning and continual upskilling for physicians – as one participant put it *"it can help offer better medicine by better doctors" (P7)*. However, views varied in terms of what the remit that the regulating body overseeing and implementing relicensing should embody; this spanned from a *"regulatory agency with non-statutory powers" (P11)*, or a *"technical agency that can say whether or not a person can be licensed" (P1)* to an executive body that *"has the rights to grant and revoke licenses" (P2)*. The predominant opinion was however that CEMTA's role and responsibility would be one of a non-executive governance nature that would primarily certify whether a doctor has completed the necessary material required for relicensing, and rather work with partners, such as the Egyptian Medical Syndicate and the Ministry of Health and Population, to grant and renew the actual license to practice.

A salient purpose that many participants reflected on was the developmental and supportive stance relicensing ought to take, and the importance of commitment to carefully build supporting mechanisms to avoid setting doctors up for failure. In the words of one participant: *"Gauging how well or not doctors are preforming and impacting quality is what I would call relicensing in the real sense. It also shouldn't, in my opinion, be a penalising system, it shouldn't try to catch out doctors but should have supporting mechanism that helps doctors to enhance their quality, and this is why we need to invest in the training and educational institutions that can support this…. How can we punish them for not meeting the criteria or quality if we don't help them achieve it, you know." (P7)*

Subtheme 2: Features

Details shared and discussed by the participants regarding the features and characteristics of medical relicensing were mostly speculative with many prefacing their responses by saying they're not sure what it will involve, or the fact that most of what they know about the details regarding relicensing is through hearsay, unofficial articles of news, and uncertain sources of information.

This was quite evident in the responses of many participants, for example: *"I've heard from xx about the updates and from some news bits here and there" (P5)*

Participants also clearly reported and expressed the there was scarcity in information or communication regarding medical relicensing, particularly from official bodies, as one of the participants have put it: *"Umm, it wasn't said in detail -- we didn't receive any circulars or details either as hard copies or emails about that yet to be honest" (P4)* which led to many seeking and relying on informal networks to find out more as evident several participants' input below:

"Well we actually know very little. I've heard through some conversations with colleagues that it may be in the form of a portfolio of some sort; bringing together conferences attended, workshops, possibly an exam? It's not very clear still" (P7)

"I remember reading about it in the newspaper -- that a law has been issued to start an authority. There was preliminary outline of the authority but no detail on how will they asses good or bad performance." (P11)

"To be honest I know very little about CEMTA or the authority for obligatory training. We heard about it a few years ago, you know that there will be relicensing. They said it will be every 5 years. It was in the papers too I think, but then nothing. We haven't heard anything at all." (P6)

A few of the participants however, particularly those in senior roles who were directly contributing to drafting the bylaws for relicensing, leading the institutions who will be involved in its roll out, or are part of the steering groups who will undertake oversight for its implementation have shared specific details about this policy intervention in respect to its purpose, and its parameters. This has been summarised and grouped under the following categories for a more methodical understanding: 1) the aim and objectives of CEMTA, 2) the remit of CEMTA, 3) the organisational structure of CEMTA, and 4) the characteristics of medical relicensing.

1. <u>The aims and objectives of CEMTA:</u>

The main aim of CEMTA, as reported by some participants, is to unify the standard of patient care across the country regardless of affiliation, and to ultimately improve the value of Egyptian clinical practitioners. The objectives of the authority are primarily to develop the level of clinical medical training for graduates of medical schools in all medical specialties, and to create, or lay the foundations for, evaluating physicians at different levels, as well as to contribute to setting standards for the content of vocational and specialized training. The "*terms of reference*" as one

participant has put it, are obtuse in its parameters, which seem to fall under the control of primarily the board of directors. These encompasses policy setting, policy implementation as well as financial and administrative regulation as described below by one of the participants:

"There are many terms of reference of the board of directors in fact. These include drawing up the general plan and setting policies and programs to achieve the many objectives of the Authority, to contracting with local and foreign agencies and exchanging recognition of certificates with various agencies, to grant the OK, or to approve of the Authority's annual plan, reports and budget, also the formation of the scientific committees, the specialised committees I mean, and accreditation of examination committees. Also to approve the organizational structure, the financial and administrative aspects of the regulations, and for selecting a member of the Board to supervise the quality committees… and working with the Ministry of Health to determine specifications and validity periods for licenses to practice the profession. Quite a lot." (P8)

2. <u>The remit of CEMTA:</u>

CEMTA was described by participants as the entity in charge of continuing professional development accreditation in the country. It was also described as the body that will certify whether or not a doctor has completed the necessary requirements to make them eligible for medical license renewal: *"[CEMTA] will be responsible for basically developing the level of medical training for graduates of medical schools, in order to qualify them for safe medical practice. On top of that, the authority will be responsible for preparing and conducting the profession practice exam for doctors in cooperation with the Ministry of Health, the Egyptian Knowledge Bank, and military medical colleges." (P3)*

Part of CEMTA's remit will oversight and accreditation, and it will also be expected to have its own program of accrediting courses and conferences, which, as of yet, does not formally exist in an organised way: *"… you know in Egypt we don't have a body that can assign points or credits to conferences for example or trainings or workshops; there's no one that can say this workshop is actually worth x number of CPD points based on the material, interaction, etc. CEMTA will undertake this accrediting role." (P8)*

The authority to grant or revoke medical licenses will however remain with the Egyptian Medical Syndicate and Ministry of Health as articulated here: *"We, as an authority will not grant the licence (or the re-license), and we're not the implementers. We will be the evidence generating agency...CEMTA's role or what it will do is to be the body that generate and provide evidence to the relicensing status, we will neither be a grantor of the licence (that's up to the Ministry of Health) not an implementor agency, I mean we won't sanction or revoke licences from doctors if they don't meet the criteria, that's up to other bodies." (P1).* CEMTA's remit is therefore also seen to be as a standard setting authority which will provide guidance and direction for the

content of specialized medical training at various levels, and setting specifications for medical institutions that possess the elements of training in the fields of medicine in the various specializations. It is also expected to play a central role in developing the foundations for evaluating doctors at various levels, which the motivation behind was expresses as *"…to ensure that they meet the appropriate training to provide medical service with a high degree of efficiency, in addition to improving medical practice and the quality of health care by setting professional and training standards for obtaining a certificate of practice and a license to practice the profession and renewing it, and supporting members of the medical profession in meeting these standards." (P1)*

3. The organisational structure of CEMTA:

CEMTA's governing board comprises of members from the Ministry of Health, the Egyptian Medical Syndicate, higher education institutions, members of the public as well as police and military services which encompasses the diversity within the Egyptian medical provider landscape. It was clear from the various inputs from the participants that the purpose of the executive board is to work in line with the authorities' statutory purpose and strategic aims, and to provide overall strategic and policy direction for the authority -- as one participant reported *"The Board of Directors is the dominant authority over its affairs, and it may take whatever it deems appropriate to achieve the objectives of the Authority." (P8).* The governing board was reported to be made up of the chairman of board of directors, secretary general of the council, chairman of the medical studies sector committee, six deans of medical colleges, dean of Al-Azhar faculty of medicine, three members of the armed forces, the director of the medical services department at the police authority, or his representative, three members representing the ministry of health, the director of the medical syndicate, and a public figure.

4. The characteristics of medical relicensing:

Medical relicensing in Egypt is set to a adopt a continuing professional development approach using a credit point-based system of accreditation which is provider based as described by participants. Details of what this comprises of, and the progress of development of its configuration can be recapitulated as follows: Physicians will be required to complete 250 hours of practice, submitted online, in the form of an online portfolio, at least 70% of which completed in the last three years within their speciality. What constitutes as practice will depend on the type of speciality, however the concept remains the same in terms of promoting, advancing and quantifying exposure and continuous training in the discipline, with much of the specific detail still being ironed out – as one participant expressed: *"Well we're now also tightening the details, like what the*

250 hours include for example. Like for example 70% should be dedicated to the doctors own speciality but the rest can be general, like in any other ones. We'll also compose a scientific committee and a technical committee to oversee the process -- the scientific committee will include 8 people form universities, 4 from the Ministry of health, 1 person from an arm forces hospital and 2 international experts—someone from Europe or America, and one from the Gulf. We'd like to develop twinning between Egypt and other countries in the various specialities." (P1)

Onboarding onto the portfolio will take a staggered approach, starting with specialities such as Internal medicine, General Surgery, Obstetrics and Gynaecology, Paediatrics, Family Medicine, Cardiology, Cardiothoracic Surgery, Anaesthesiology and Intensive Care, Paediatric Surgery, Ophthalmology, Ear, Nose and Throat, and Emergency Medicine which will be then followed by the remaining specialities. The first batch to be re-licensed is expected to be in 2025, which means that the 2020 graduate cohort is expected be the first to be relicensed (i.e.: five years later)

Theme 2 Operational climate

As discussed in more detail in chapter three, in the past decade, the medical education and regulation landscapes in Egypt have experienced several modifications and transformations to bring health and healthcare provision in line with global advancement. These significant governance and structural developments in the health system configuration marked by the adoption of the Egyptian Universal Health Insurance law, the change in undergraduate medical education programme structure, as well as the establishment of three new health bodies - The Universal Health Insurance Authority, the General Authority of Healthcare, and General Authority for Healthcare Accreditation and Regulation – brought about a major overhaul in the system creating both opportunities and challenges for medical relicensing which many participants identified and reflected on. Two discrete areas featured in the data within this theme, one primarily addressed the shift in governance arrangements and its considerations, and the second relating to contextual aspects of the health system and the limitations this presents for relicensing.

Subtheme 1: Command and control considerations

Changes in the medical regulation landscape, and the impact of which on the potential effectiveness of the introduction and roll out of medical relicensing, was a feature in most reflections by the participants. More specifically, participants voiced out a mixture of perceptions, concerns, and forecasts in relation to how, and in what way, will medical relicensing "fit" into the current picture of medical regulation in Egypt, which ranged from optimism for meaningful improvements, to predictions of failure.

A salient view across all participants was, that despite the health system organisational redraw, there is still a need for a more structured approach to introduce accountable and uniform methods of quality evaluation which must be supported by clear governance mechanisms. As one participant expressed: *"I have to say though that I feel there's a step change in medical education in Egypt – there are so many things going hand in hand…We will start to have better medical records and stronger monitoring and evaluation for practice in general. This will also involve the public and private sector so places like universities will be able to train more and draw more talent" (P4)* This suggests that despite the revamp in the health system configuration, a gap still exists, which a policy intervention such as medical relicensing, could appropriately fill if it was instituted in a fit-for-purpose and fit-for-context manner.

The need, and importance, of systematic approaches for evidence collection and endorsements to ensure credible and accountable processes of licence renewal was collectively emphasised, and the fundamental role of supporting organisations, such as academia and national training bodies, in the provision and delivery of training and development was affirmed. This has come up time and time again in the participants responses and reflections which have also included nuanced and detailed suggestions for the responsibilities the supporting organisations should undertake as expressed here:

"There's still a need for an independent authority, an authority that endorse the documents and sets direction. A medical council of some sort. Not just a syndicate, which here merely operates as a fee-paying agency for membership. Even in terms of punishment, they only revoke membership when a doctor commits grave negligence, there's nothing else in between – no probation, no nothing." (P7)

"We need an actual system that is manageable by the official accrediting body. A place to endorse qualification, like for example, if I take a certificate from inside or outside of Egypt, this would be the place that can acknowledge it and endorse it. Secondly, this body should also check continuity of practice. Like If someone applies for a promotion or relicensing or revalidation there must be proof that they ae still practising – in Egypt we have people that haven't practice d for years and they are still counted as 'active'." (P2)

"…this body needs to have continuous medical and professional education. This is so important. Yes. We still don't have this system which accredits those, like training hours or example or contribution to workshops and conferences"(P9)

Parallels were also drawn from governance systems operating in neighbouring countries with similar health system architecture which could, and should, be considered to inspire the design of the Egyptian medical relicensure approach:

"First and foremost, we need the system that is well structured and well evidence. Like I said, we don't need to reinvent the wheel – it won't be effective nor efficient. We should learn from what's already been done and how others navigated through it. Of course, we will develop our own problems; our context is different, but at least we can focus on managing that rather than added structural issues." (P12)

Examples of health system governance approaches used in countries within the region included Saudi Arabia whereby the Saudi Health commission operates a strong regulatory function, autonomous from the Ministry of Health or Ministry of Education, and in Sudan, where a similar agency oversees monitoring, and enforcing compliance with standards and regulations. This is quite dissimilar to what currently exists in the Egyptian health system, yet to a large extent feasible to achieve, given the current changes in the national health system reorganisation discussed earlier—As one participant expressed:

"It's not like what we have, -- we only the Syndicate which a fee paying agency for registration, it doesn't have a regulatory function." (P11)

Weaknesses within the operational climate, particularly in terms of communication between the multitude of institutions currently operating in the governance landscape, and the role they will be expected to undertake in relation to relicensing stood out in the views shared as a potential, but serious, drawback for the introduction and sustainability of relicensing. The obvious lack of communication between institutions who would ostensibly be involved in some shape of form in medical reclining, such as the Ministry of Health and the Medical syndicate, draws a challenging picture for successful implementation. As one participant put it:

"This will require that the Ministry and the Syndicate speak to each other, and as you know the MoH and the syndicate are divorced." (P4)

Other participants also echoed these sentiments emphasising the failure in communication channels and purposeful connections between institutions involved. For example, as two participants expressed: *"It's quite disjointed. Particularly the institutions that offer training which potentially can join forces for the relicensing – I mean become places which can offer training and endorses credit hours and the sort." (P11)* and *"This won't work without an effective communication strategy. For starters through official institutions or bodies like universities and colleges. The syndicate should also be involved, and outreach activities should be planned like workshops and trainings. This at least would reach all those who are involved." (10)*

Finally, the importance of effective enforcement, and clarity in chain of command and authority were also identified by participants as crucial components for effective command and control, which in the current system still lacks grit. A salient reflection by participants was that compliance must be a distinct and core feature of operationalisation, otherwise the objective of relicensing, in terms of enhancing performance and quality of care, won't be achieved.

"The system is quite broken in this sense. We don't have any mechanisms to enforce any regulation not just in the health system, in all other aspects of life. We have nice shiny laws and regulations that look quite good and sensible (sometimes) but nothing gets enforced. There's no capacity, and I don't necessarily mean a technical capacity, I mean in terms of monitoring, evaluating, and enforcing." (P5)

Subtheme 2: Health system boundaries

Context is key when it comes to health policy interventions, and the Egyptian Health System infrastructural boundaries wholly permeated the reflections of the participants when discussing the suitability of medical relicensing. The significance of context-specific considerations, and the appreciation of systematic factors such as structural and situational factors featured repeatedly in the discussions. Unique features within the system such as the challenges of fragmentation due to multiplicity of degrees (i.e.: the intertwined tracks of academic and vocational qualifications), the scarcity of electronic health and medical records, and the challenges this presents in terms of tracking performance and outcomes, the ambiguity that surrounds the health labour market analysis, and the nascent professional development accreditation system were particularly underscored. These have been summarised and grouped below:

1. <u>Multiplicity of degrees:</u>

In Egypt, academic and vocational tracks are somewhat misaligned and, in many instances, disorganised with multiple paths to pursue towards qualifications in postgraduate level, including the attainment of scientific degrees (MSc. or PhD.), the Fellowship of the Egyptian Board, and the Fellowship of the Arab Board. As discussed in further detail in chapter three, for example, although the national family medicine residency program exists in its own right, which necessitates three years of service in a public primary healthcare unit and the completion of a Masters' degree that designates them as family medicine specialists, a parallel path also exits, the Egyptian Fellowship Board, which also qualifies graduates as family medicine specialists. As these two participants expressed: *"Well in Egypt there is the Egyptian board, the Egyptian fellowship, the Masters and the PhD. It's quite confusing and there's often duplication between them" (P8)* and *"We have in Egypt, the specialities are very*

dependent on the academic component, you know, like you get a diploma and a Masters in conjunction to your clinical training. It' more academic than vocational. You know in Egypt we've always had both tracks fused together, that's what was always familiar. This changed in the early 2000s though with the introduction of the Egyptian board, which is a professional qualification, -- it's a fairly recent experiment in Egypt really. This is in contrast to what many countries around us and others in the world do, like in the UK or US for example, where the academic track is separate." (P6)

This multiplicity within the degrees, and their coalescent nature, often combining academic and vocational should be regarded in the design of a performance evaluation intervention such as relicensing, and arguably will have implications on the type and approach to data collection and endorsements to ensure credible and accountable processes of licence renewal.

2. Electronic health and medical records:

The existence and use of electronic health and medical records remains to be the exception to the rule across most of the healthcare system, and where they do exist their application and use is basic in function and, as of yet, lacks the elements of linkages of records across various tiers of the system: *"We still don't have either good electronic medical records nor a decent referral systems. The patients we get, we sometimes never see again, and they can access secondary care very easily because we still don't have any gate keeping in the system." (P6)*

As one participant put it: *"[We] need a digital transformation!" (P2),* and arguably a substantial component of such required transformation is to improve and expand the health information system so as that it's capable of purposefully collecting and linking medical records and data in an electronic and standardised manner to allow for streamlined and efficiently managed patient follow up as well as relevant appraisal of physicians' activities.

"We don't have established electronic medical records for example to check if the doctor is prescribing the right drugs or if the patient had any complications. We also don't have a referral system as you know so it's difficult to track patients. How will they see how well the doctor is doing?" (P9)

3. Health labour market:

In Egypt, a national, well-established, information system that is capable of capturing, analysing, evaluating and disseminating the necessary information required to inform and support decision-making regarding health labour management and practices is still in its initiation phase, and

processes in place for the management of health workers, including supervision, performance monitoring, career development remains inadequate; as described by one of the participants: *"Well, the first step is we need at least is to know what the size of the health workforce is. How many practising physicians (ie: how many internists, how many Obs and Gynae), how many nurses, etc. We still do not have figures that are clear. We also need to know if they are actually practising or not. As it stands people can renew their licenses just by paying the membership fees to the syndicate, they don't need to show any proof of practice . You know it operates as a membership organisation." (P5)*

4. Professional development accreditation system:

Another prominent aspect discussed was the budding system in place to recognise and certify continuous professional development, which is still in its infancy, and the importance of developing this further and rolling it out prior to the introduction of relicensing. This is quite a fundamental consideration given that the likely approach medical relicensing is expected to adopt is a continuing professional development one using a credit point-based system of accreditation. This was highlighted in many participants' contribution such as: *"We still don't have this accredits system which continuous medical and professional education, like training hours or example or contribution to workshops and conferences." (P9)*

Several participants also reflected on the fact that as of yet there isn't a functional system to accredit courses, conferences, learning events, etc, and what's currently in operation is still disjointed; as one participant expressed: *"We need something that can work with our infrastructure, something that can be documented, a combination of attending workshops and conference but we need a system that assigns points or credits to such skills." (P12)* What's currently observed that further professional development and education is self-driven, rather than required, which arguably an intervention such as medical relicensing is expected to change to a large extent, however, may still not address specific areas for improvement based on informed needs assessments. This situation is compounded by the clear absence of any kind of national guidance or strategy to identify eligibility standards, application, and review processes for providers to be accredited as continuous professional development providers which is essential to develop before any considerations for license renewal can take place.

"It's [Continuous professional development and education] often demand based rather than needs based and it's really all about self-effort, I mean if you want to do a certain course, and you can pay for it, then you go and do it. Practically speaking though, no one really goes because there's no incentive, and it's mostly not accredited. If you're really keen about developing your own skills then you often find a course abroad." (P7)

Theme 3 Taking relicensing forward

Concerns about quality of care, patient safety, and public confidence in the medical profession have dominated the public and medical community discourse respectively for years, with all sides calling for more regulation and reform. Nonetheless, the clear shift from professional autonomy, which was often perceived as permissive, to regulated professional accountability, instigated by the introduction of medical relicensing, offered a remarkably different new-normal which many participants reflected on with cautious optimism and thoughtful consideration. Discerning views regarding how the medical community will acknowledge, perceive, and ultimately react to, medical relicensing were central to all participants' reflection, and practical ideas were put forward to improve preparedness for roll out. As such, two particular areas featured in the data within this theme, one primarily addressed the perceptions and perspectives for implementation from a health workforce standpoint, and the other focused on tangible and circumstantial aspects for preparedness and readiness.

Subtheme 1: Acceptability & adoption

Views and feelings varied in terms of how physicians have reacted to the news of the introduction of medical relicensing, which extended to their own predictions of how the health workforce will adopt and buy-in to this regulatory change. Some participants were neutral in terms of how they regarded medical relicensing, its introduction in Egypt, and how it will affect them, which primarily stemmed from the limited knowledge about what relicensing will entail (as a result of the patchy information shared in the public sphere). However, the majority of participants expressed dismay in terms of how the news of medical relicensing unfolded or have taken the form of piece-meal chucks of information, with very little clarity or guidance from either CEMTA or other official bodies. Many participants translated this dismay as a major contributing factor to impeding the successful roll out of whichever version medical relicensing will take effect, and envisaged disengagement and withdrawal within the health workforce as a result. An example of this includes: *"Well first we need to go back to what is actually the point of this, right? If it's a tick box exercise, then to be honest there's no point of it at all. Why is this being done? And I'd like to point out here that there was no consultation prior to this. Like many other top down decisions in the medical community and beyond, this was another parachute one. I assume it's to increase the quality of doctors, which is certainly a good thing in principle, but relicensing may not be the thing that does it. I understand that in places like the* UK *you have revalidation, which one can argue could actually work here, but it really need to be context specific. In places where this works for regulating doctors*

there's a strong underlying system that enables and supports this. This doesn't exist in Egypt—most places that still uses paper records!" (P7)

There were also salient feelings of resentment, disappointment, and discontent due to the lack of wider consultation, lack of communication, and lack of clarity by those in charge about the features and aspects of medical relicensing which also dominated the participants' responses; as one participant expressed: *"It feels like it has not been thought through, there was no consultation no feasibility study. There was a decision made to create this agency, and that was basically that. The decision was made behind closed doors without any discourse with the medical community or stakeholders. It was very top down. Even starting from the name: why is it called authority, it has a very directive and authoritative connotation. Why not council or agency or commission…authority is a very strange choice of word. In addition to that it's the 'authority for compulsory education'…. It's quite hostile choice of word to be honest." (P2)*

The lack of a structured and clear communication strategy was a particularly salient issue highlighted as a hindrance to adoption as well. These views were juxtaposed by conveying the importance of developing and actioning of such a strategy, and an aligned action plan, to promote clarity, transparency, and acceptance (or at least acquiescence).

"It's actually so unclear and there's no communication. It strikes me as there is no communication strategy of any sort. I mean this is meant to commence in in a year or two, how does nobody know about it and we're all speculating based on random and sporadic information in the newspaper. I expect that they will remember a month before it's meant to be rolled out. That's why I'm not optimistic." (P11)

"This won't work without an effective communication strategy. For starters through official institutions or bodies like universities and colleges. The syndicate should also be involved, and outreach activities should be planned like workshops and trainings. This at least would reach all those who are involved." (P9)

Acceptability of this new regulatory intervention, and its adoption, also hinges on a number of system wide components, or building blocks, such as health information systems and underlying behaviours and attitudes of the health workforce, which, when push comes to shove, will underpin the trajectory of success of this intervention. As described by one of the participants here: *"For this to work, we need a digital revolution…or at least electronic medical records to start with. If we are able to link doctors to patient outcomes then we can at least track progress of things like complications. This is another story actually, not just creating the system, the electronic system I mean, but also the management of it. We still don't have a proper referral system so I'm not sure how we can track patients pathways. To be honest I feel this will be mostly be a paper work exercise where you just go file for relicensing every five years and get a document from wherever you*

work, saying you're working there, and maybe that you pay your syndicate fees, and boom you're relicensed. It won't be relicensing, or revalidation like you call it in the UK, in the real sense" (P7)

The underdevelopment of the current health information infrastructure, its fragmentation, and the poor linkages across the levels of the healthcare system, and the anticipated resistance to change by doctors, particularly senior staff, were of primary concern by all the participants, without exception. These sentiments can be appreciated in a number of participants' input including: *"We don't have electronic medical records, or at least not everywhere, and we don't have linkage between practice and individual performance" (P10)* and *"You're talking about a number of different generations who this is very foreign to. I can't see senior doctors or famous clinicians actually doing this to be honest, especially from what we know about it so far -- It's not giving the right tone. Also with this name, it limits the function to just training, which many older generation doctors won't subscribe to—and I doubt there will be proper checking for this either so many people, not just senior staff, will simply sort out their paperwork" (P5).* Participants clearly conveyed that tackling these two areas were of crucial significance for any successful implementation or roll out to take place.

Subtheme 2: Preparedness and readiness

Views and opinions regarding the preparedness and readiness from a health system infrastructure perspective and from an operational perspective outlined in earlier subthemes led the way to a rich and detailed range of suggestions and recommendations for effective and positively impactful roll out and implementation by the participants. Reiterating some of the thoughts and ideas discussed earlier, the majority of participants believed conceptually in the relevance and importance of regulated professional accountability, and the positive impact this can have on improvements in quality of care, patient safety, and public confidence, however, these sentiments were permeated with trepidations associated with lack of meaningful steps taken thus far towards planning, preparedness, and communication.

Many participants emphasised that a format for medical relicensing that carefully considers context-specific attributes that is applicable to the Egyptian healthcare system and structure, and that considers the health workforce capacity and readiness for change, is fundamental for the way forward. As one participant expressed: *"We've needed an entity like this for years now, but it needs to be established properly. The establishment needs to be strong and encompassing so it can be effective." (P12).* These recommendations were coupled with concrete and practical suggestions to stimulate adoption and continuous development, which ranged from introducing monetary incentives such as wage raises or supplementary bonuses, as well as non-monetary incentives, such as promotion, awards, and

accreditation. Some suggestions also included governance checks and requirements for career progression and growth, for example as described by participants here:: *"You know if for example when you are relicensed you're offered something like a grade promotion or even something like a quality check which means that for example a family medicine doctor who is relicensed would get, say 20,000 EGP, you'll find more of them staying here. It can be very positive to retain local talent." (P5)* and *"It could be as part of the promotion requirement for example. In the University for example we still operate on the publication model for advancement through the ranks – you have to publish x number of papers nationally and x number internationally to move up positions, but perhaps if something like medical relicensing or continuous professional development was included to this, it can be more useful." (P7)*

It was also expressed that, to allow for context-sensitivity, and to work with the current system's limitations, rather than against it, relicensing can start with CPD elements like conferences and workshops and incrementally build towards a robust system that can quantify physicians' performance which would be facilitated by the development and improvement of electronic medical records. Furthermore, as part of the notion of effective uptake and adoption of medical relicensing, and the strategies that can be put forward to promote positive improvement and change, many participants put forward ideas that they believed can create, and promote, a culture of positive change and quality improvement; as one participant expressed: *"I mean, if there is clear and focus direction, people will do it not because they're afraid to get caught or to lose their license, but rather because they want to do it. Maybe even there's something in it for them. If you want anything to be successful, you need to prepare well for it." (P4)*

In the same vein many participants cautioned against positioning medical licensing as a penalising system which can deter current and future health workers from choosing medicine as a career, which would add more to the health workforce shortages already experienced across the country. As one participant put it: *"We also need incentives so it's not a deterrent and we don't lose more physicians and brain drain. Also, a financial reward system – a salary scale/ after x certificate. Also non-monetary incentives. A form of positive differentiation and reward. People should look forward to it and benefit from it." (P12)*

Finally, a clear and widely disseminated communication strategy entailing the case for, objectives, steps for undertaking relicensing, including both individual and institutional guidance, and repercussions of failing to do so was at heart of all suggestions put forward to support effective implementation and buy-in. This was voiced out time and time again and prefaced almost every recommendation or suggestion put forward by participants in regards to effective preparation and for moving forwards. Examples of such input includes: *"We really have to prepare. Its very important.*

Like I said before, I as doctor for example need to know what I need to prepare and develop before the deadline for re-licensing. Which body will help me to do that? What is my role and what the role of the other institution? If I don't pass the relicensing, will I no longer be able to practice ? We still don't know really. It needs communication with the doctors and communication between the institution ons who will implement and prepare." (P2), and

"Of course it's a good system but everything needs preparation before it and needs orientation. Training for staff members. For example, if I will be assessed or evaluated in five years, then what will need to know or what do I have to do in the run up to that to receive this licence? (P6) as well as *"A communication strategy should include speaking to the main stakeholders, the universities, the training institutes, but also all those involved, even doctors. It can be in assembly like situations where as many people as possible can take part and engage in questions. They can also do it in like a video from the authority, detailing all the details necessary and it would be cheap and disseminated to all. It will give a sense of relief to people and empower them." (P11)*

8.3 Discussion

I set out to explore the process medical relicensing in expected to undertake in Egypt, and to understand the dynamics, and influences between this soon-to-be implemented intervention, the health system features and the workforce. I aimed to capture comprehensive and detailed information regarding the shape relicensing is expected to take, the preparation underway for relicensing, and how it's expected to affect the performance of physicians in Egypt. To do so, first-hand insights from leaders in the fields of health workforce, medical education, training, and capacity building, and those who are directly involved in the process of relicensing in Egypt were consulted, and the information they shared was studied and analysed. The following are key reflections:

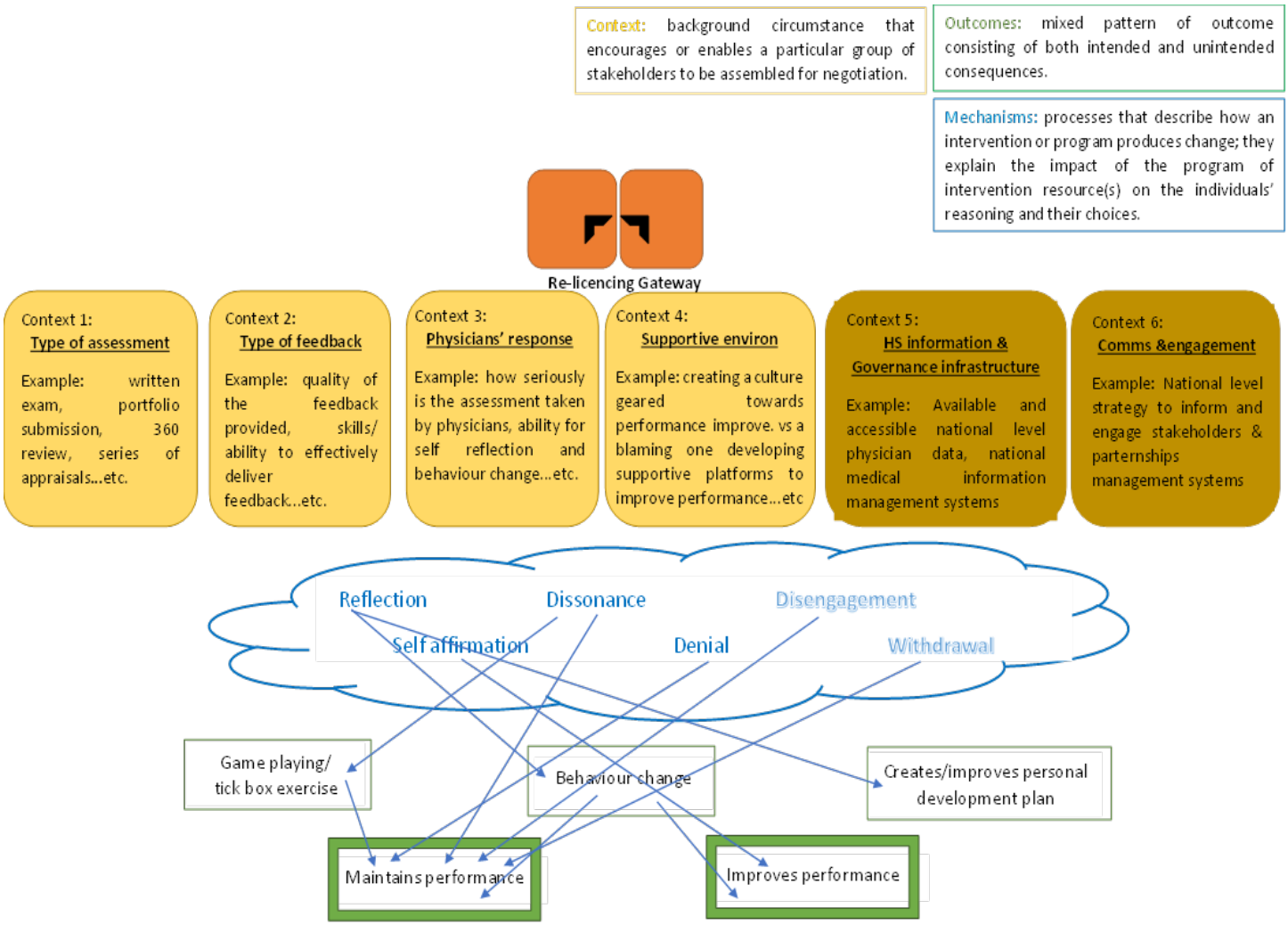
First, that there is a clear need for structured and regulated professional accountability within the health system, which the introduction of medical relicensing has the potential to realise. The introduction of a health workforce policy intervention such as medical relicensing can be of great value to enhance the safety and quality of medical practice and can be a step-change in terms of boosting opportunities for active learning, continuous medical and professional development, and upskilling physicians in Egypt, if it is designed and implemented in a fit-for-purpose and fit-for-context manner. This will require careful consideration in terms of what's feasible within the current scope of the Egyptian health system, and for the many moving parts within the Egyptian health and care system to work together. This also means that meaningful partnerships with supporting organisations, such as academia and national training bodies, who are expected to play a central role in the provision and delivery of training and development, need to be forged, and

that the establishment of systematic approaches for evidence collection and endorsements to ensure credible and accountable processes of licence renewal is necessary. Secondly, there are numerous health system limitations, particularly in terms of health information and governance infrastructural boundaries. Accountable and uniform methods for data collection, and quality evaluation are imperative, and so is clarity of governance mechanisms for effective enforcement. lastly, the importance of clear, consistent, and coherent communication regarding the purpose, process and procedures required to undertake medical relicensing cannot be understated. Uncertainty regarding the majority of aspects of medical relicensing in Egypt still persists amongst most cadres of the healthcare profession, except for a small and defined group of individuals who are directly involved in its provision. It is imperative that it becomes common place knowledge what the objectives of medical relicensing are, to have clear timelines for initial implementation and thereafter, to clearly identify the ways by which relicensing can promote good practice, strengthen public confidence, encourage a culture of reflection, and improvement, and the available resources to support physicians get the best out of their relicensing.

Some of these findings, particularly in terms of context, mechanisms, and outcome, are consistent with findings from the scoping review study which explored the body of evidence around how relicensing, and variations of it, work, and in what ways produced its effects (figure 8.1).

Areas of alignment within the Egyptian setting include 'physicians response' (Context 3) and 'supportive environment' (Context 4); mechanisms such as dissonance, denial and reflection, and potential outcomes such as game playing (intermediate outcome) and maintaining performance (final outcome) also align. Other findings are more setting specific, or bespoke to Egyptian perspective, these include: 'health information and governance infrastructure' (Context 5), 'Comms and engagement' (Context 6), disengagement and withdrawal (Mechanisms) which have been described earlier in the text. (figure 8.1)

Figure 8.1: Revised CMO-C generated in light of findings from interviews:



Source: Author

The synthesized knowledge discussed therefore warrants a number of key considerations for the way forward, which include:

1. To improve and expand the health information system—more specifically to purposefully collect and link standardized electronic medical records and data, to improve data quality, standardization, and linkages and to embed analysed data in informed decision-making in order to enable physician-linked performance data and improve interoperability across the healthcare system tiers.
2. To strengthen health system governance-–more specifically, to integrate compliance as a distinct and core feature of operationalisation, to foster dialogue to enable within, and cross, sector partnership, and to support implementation though establishing clear strategic vision and national guidance to identify eligibility standards, application, and review processes.

3. To promote good practice, and encourage a culture of reflection, and improvement-–more specifically, to establish developmental and supportive principles underpinned by relicensing through a system wide approach, to support and encourage physicians for facilitate self-review, and provide clear guidance for policy, processes, and timescales as well as clear roles and responsibilities for individuals and institutions involved.

Given the knowledge generated thus far, next steps comprise of ascertaining what the priorities are, and consensus around, the implementation of relicensing in Egypt and to identify the most important considerations and key factors that lend themselves to likely intended and unintended outcomes of this policy intervention, as well as identify possible context-specific and context-sensitive recommendations that can be made to navigate through the enablers and barriers for the Egyptian health system.

8.4 Strengths and limitations

To the best of my knowledge, this is the first study to identify and capture comprehensive and detailed information regarding the shape relicensing is expected to take, the preparation underway for relicensing, and how it's expected to affect the performance of physicians in Egypt. This is also the first research effort to offer an evidence-informed preliminary conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt.

Although this was a small-scale study, participants were sampled from across Egypt, and included international experts, in the field of health workforce with extensive experience and research in the subject matter, and from across a range of organisations, so as the breadth of views could be explored. It's important to note that this study reports on a very specific format of medical relicensing which is specifically relevant to Egyptian perspective and setting, and that these views cannot be generalised to other health systems. Furthermore, this study was conducted in 2019 when scarce detail regarding relicensing existed – more information has been made public since, however still lacks detail and specifics.

I would also like to disclose that I am aware of and acknowledge my position and views having studied and practice d medicine in Egypt years ago and have interrogated my views and assumptions throughout the research process in order not to bias, or influence, the data collection or analysis in any way. My knowledge of, and training, in the Egyptian context presented an opportunity to appreciate nuanced context-sensitive and context-specific reflections put forward by the participants, yet also posed as a challenge in some instances whereby participants may

presume I'm aware of and/or understand aspects of their reflections given my experience and background which I consistently questioned and interrogated in detail to eschew impartiality. My familiarity with the research context and setting, coupled with my work experience in health systems health and health workforce development globally, has created a unique opportunity to probe and explore the experiences of participants and the meanings they attribute to them.

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In this chapter, I identified and analysed first-hand insights from experts in the fields of health workforce, medical education, training, and capacity building, and those who are directly involved in the process of medical relicensing in Egypt. More specifically, I explored perceptions regarding the shape relicensing is expected to take in Egypt and the preparation underway for relicensing, investigated how it's expected to affect the performance of physicians in Egypt, as well as identified key considerations that inform future directions. This chapter is informed by the findings and synthesis from the semi-structured interviews study, which informed the next stage of this PhD inquiry, the modified Delphi questionnaire. In the next chapter I ascertain and generate consensus around key consideration and priorities to support effective implementation of medical relicensing in Egypt and generate consensus around how relicensing as a tool can be used to improve physicians' performance. These findings can also be used to inform future exploratory studies into physician and patient engagement with medical relicensing, and the expanding role of health system organisations in supporting physician performance management. The next chapter is informed by the findings and synthesis from the modified Delphi study.

CHAPTER 9: CONCEPTUAL CONSIDERATIONS: THE IMPACT OF MEDICAL RELICENSING ON PHYSICIANS' PERFORMANCE IN EGYPT

9.1 Introduction

Following on from the semi structured interviews, which identified key knowledge from expert stakeholders in Egypt and in the field of health workforce globally, regarding medical relicensing in Egypt, a preliminary conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt was developed (Figure 8.1, chapter eight). This preliminary conceptual framework was also informed by ongoing refinement of the context-mechanism-outcome configuration in light of the data synthesis from previous studies in this thesis (Chapters six and seven), which resulted in new, and context-sensitive, information mapping the various ways by which regulatory interventions can affect performance of physicians. This created a unique opportunity to 'test' this new knowledge and generate insights on this controversial topic, which clearly little was known about, as well as explore a variety of options which medical relicensing in Egypt, as a policy intervention, can encompass. (Strauss and Zeigler 1975; Kay Rayens and Hahn 2000)

As a research method that addresses multiplicity of issues and provide direction for policy change (Santaguida et al. 2020; Hsu and Sandford 2007; Clayton 2006; Jorm 2015; Kay Rayens and Hahn 2000) the Delphi technique encompasses components that are both qualitative and quantitative and is unique in that it crosses the methodological divide, therefore, well-aligned to produce policy solutions under conditions of uncertainty. The Delphi technique is valuable in policy development because it leverages the collective wisdom of experts, reduces the impact of biases and group dynamics, and helps policymakers make informed, evidence-based decisions in complex and uncertain environments. It is especially useful to build consensus in a structured and systematic method and when dealing with issues where there is no clear consensus. This technique was hence best suited to identify what the priorities are, and consensus around, the implementation of relicensing in Egypt in a systematic and effective way. As discussed in chapter five, a modified Delphi technique was used here, whereby the first round was replaced with an extensive review of the literature, and findings from the preceding studies, which was used to derive the statements for the subsequent questionnaires. The first round in this modified Delphi study therefore was a structured set of questions, including open-ended questions and free text, which the participants were asked to answer, complete, rate or rank-order to establish preliminary priorities among items.

The questionnaires for rounds one and two were all developed and disseminated in English. For rounds one and two, descriptive statistics were used to evaluate consensus agreement, including percentage agreement. The Analysis included mean rating, percentage agreement, percentage disagreement, variance, and standard deviation. Consensus was established if ≥ 70% of participants agreed/strongly agreed or disagreed/strongly disagreed with a statement. For each round a composite ranking of statements which have not reached consensus was produced and circulated to the participants at the outset of the following round. Analyses was conducted using Microsoft Excel for the first two round. The focus group discussion (third round) was undertaken virtually using MS Teams communication video platform, and the discussion was recorded, transcribed, and analysed.

9.2 Results

Out of 32 participants invited to take part in the study, 19 agreed to participate, 17 of which completed the survey. All 17 participants completed rounds one and two. Round three comprised of a focus group discussion with seven participants from the pool of 17 who were willing and agreed to take part. Similarly to the approach used in the semi-structured interviews in the earlier study, non-probability purposive sampling was also used. As seen in tables 9.1 and 9.2, the participants comprised of Egyptian physicians (both in training and fully trained) working in Egypt, and national experts in the field of health workforce with extensive experience and research in the subject matter - this encompassed the fields of medical education, training, capacity building and/or regulation. There was a particular emphasis to include all those who would be affected in any way by the introduction of medical relicensing which included junior and senior physicians, academics, and those engaged in the medical regulatory landscape in Egypt.

Table 9.1 Characteristics of participants for rounds one and two:

Participants	**Number**
Total	**17**
Primary affiliation	
Academia	3
National Institution (including regulation, training and/or research)	4
Public health services (including primary care and/or teaching hospital)	10

Expertise	
Medical education	3
Capacity building (Health workforce development and training)	5
Governance (Medical regulation and accreditation)	2
Quality of care	2
Clinical practice	5
Position	
Senior consultant/Advisor	8
Junior consultant	5
Trainee	4
Gender	
Female	10
Male	4

Source: Author

Table 9.2 Characteristics of participants for Round three:

Participants	Number
Total	**7**
Primary affiliation	
Academia	1
National Institution (including regulation, training and/or research)	3
Public health services (including primary care and/or teaching hospital)	3
Expertise	
Medical education	1
Capacity building (Health workforce development and training)	2
Governance (Medical regulation and accreditation)	0
Quality of care	1
Clinical practice	3
Position	
Senior consultant/Advisor	3
Junior consultant	2
Trainee	2
Gender	
Female	6
Male	1

Source: Author

As discussed in further detail in chapter five, questions under domain one focused on the participants' perception of relicensing in general, and what they considered would be its impact, both positive and negative. Questions under domain two focused on the participants' perception of how medical relicensing will take shape in Egypt, and what they consider can support, or hinder, its successful implementation. Questions under domain three focused on what the participants' considered to be the priorities to support effective implementation of relicensing in Egypt, and their recommendations for an appropriate, and acceptable, approach – Domain three was divided into two parts, section A: Questions related to the content of medical relicensing in Egypt, and section B: Questions related to the context within which medical relicensing in Egypt operates. The complete set of questions can be found in appendix 5.

For round three, the focus group discussion, analysis was undertaken using codes to classify and manage the data as presented in the transcribed focus group text and were organised in an analytical framework. The codes were grouped into clusters of similar and interrelated concepts to form categories, which fed into the domain structure of the study's mainframe. Comments and free text from rounds one and two were also analysed, adding further insight and deeper understanding to the consensus, or lack thereof, to triangulate the numerical data. The overall results across all rounds can be seen in table 9.3.

Table 9.3: Overall results across all rounds

	Consensus	Round	Comments
Domain 1: Relicensing as a tool to improve healthcare quality and safety standards			
All medical professionals should undergo a form of periodic review of their competence and up to date professional knowledge and skills	70%	1	
All medical professionals should regularly take part in activities that maintain and develop their competence and performance	76%	1	
The medical relicensing process, should include elements that address knowledge	76%	1	
The medical relicensing process, should include elements that address skills	100%	1	
The medical relicensing process, should include elements that address performance	94%	1	
The medical relicensing process, should include elements that address safety	94%	1	
The medical relicensing process, should include elements that address quality	94%	1	
The medical relicensing process, should include elements that address communication	82%	1	

The medical relicensing process, should include elements that address partnership and teamwork	88%	1	
The medical relicensing process, should include elements that address trust (with colleagues and patients)	82%	1	
Medical relicensure should be an assessment ***of*** learning (ie: summative assessment, such as a graded assignment or exam)	No consensus reached		R1: 41% 29% 30% R2: 67% 16% 17% Discussed in FG
Medical relicensure should be an assessment ***for*** learning (ie: formative assessment, such as a activities to facilitate reflection and professional development)	76%	1	
Medical relicensure should include elements of formative and summative assessments	71%	1	
Domain 2: Key considerations for medical relicensing in Egypt			
I believe that relicensing in Egypt has clearly defined objectives	No consensus reached		R1: 12% 29% 59% R2: 27% 17% 56% Discussed in FG
I can confidently describe the components and processes of relicensing in Egypt	83%	1	
As i understand it, for a medical doctor to be relicensed in Egypt s/he will have to complete 250 hours of 'practice ' over 5 years (which primarily include continuous professional development and training*), the evidence of which should be submitted in the form of an online portfolio.	83%	1	
I believe that participating in 250 hours of practice (as outlined in the question 2.3) suffices to verify that doctors are up to date and fit to practice .	71%	1	
There has been adequate preparedness and preparation to enable participating institutions and individuals to effectively implement and undertake relicensing in Egypt	71%	1	
There has been adequate planning and preparation to monitor the roll out of relicensing once it's launched	No consensus reached		R1: 6% 29% 65% R2: 17% 17% 66% Discussed in FG
There has been adequate planning and preparation to evaluate of the impact of relicensing once it's rolled out.	72.2%	2	
The aim of the introduction of medical relicensure in Egypt, as perceived by you, is to improve patient safety and quality of medical care	71%	1	
The aim of the introduction of medical relicensure in Egypt, as perceived by you, is to create more regulatory and administrative challenges	No consensus reached		R1: 65% 29% 6% R2: 44% 39% 17% Discussed in FG
Medical relicensure in Egypt, in its current structure and organisation, has the potential to improve patient safety and quality of medical care	No consensus reached		R1: 30% 29% 41% R2: 33% 28% 39% Discussed in FG
If designed and implemented in a context sensitive and context specific manner medical relicensing in Egypt can detect emerging sub-standard, dangerous, or criminal practice and take effective action at an early stage before patients come to harm	No consensus reached		R1: 65% 29% 6% R2: 61% 22% 17% Discussed in FG

If designed and implemented in a context sensitive and context specific manner medical relicensing in Egypt can reassure patients by creating better certainty about the quality of care their healthcare provider has be signed-off to deliver.	77%	1	
If designed and implemented in a context sensitive and context specific manner medical relicensing in Egypt can encourage professionals to admit even the possibility that a doctor might be putting patients seriously at risk	No consensus reached		R1: 53% 23% 24% R2: 61% 11% 28% Discussed in FG
If designed and implemented in a context sensitive and context specific manner medical relicensing in Egypt can create an environment for a uniform and systematic arrangement to verify that doctors are up to date, and fit to practice .	76%	1	
Domain 3: Key priorities to support effective implementation of relicensing in Egypt			
Section A: The content of medical relicensing in Egypt			
Activities that address the knowledge elements **must** be included as part of medical relicensing in Egypt	76%	1	
Activities that address skills elements **must** be included as part of medical relicensing in Egypt	82%	1	
Activities that address performance elements **must** be included as part of medical relicensing in Egypt	88%	1	
Activities that address safety elements **must** be included as part of medical relicensing in Egypt	82%	1	
Activities that address quality elements **must** be included as part of medical relicensing in Egypt	75%	1	
Activities that address communication elements **must** be included as part of medical relicensing in Egypt:	78%	2	
Activities that address partnership and teamwork elements **must** be included as part of medical relicensing in Egypt	75%	1	
Activities that address trust (with colleagues and patients) elements **must** be included as part of medical relicensing in Egypt:	No consensus reached		R1: 65% 18% 17% R2: 67% 16% 17% Discussed in FG
In terms of knowledge assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity			
➢ Written exam	No consensus reached		R1: 65% 0% 35% R2: 39% 11% 50% Discussed in FG
➢ Oral exam	No consensus reached		R1: 35% 12% 53% R2: 50% 11% 39% Discussed in FG
➢ Continuing professional development activities	83%	1	
➢ Quality improvement activities	89%	1	
In terms of skills assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ An Appraisal (defined as a facilitated self-review supported by information gathered from the full scope of a doctor's work)	83%	1	
➢ Continuing professional development activities	89%	1	

➢ Quality improvement activities	89%	1	
➢ Personal development plan development and review	82%	1	
➢ Personal reflection on practice	100%	1	
In terms of performance assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Key performance indicators	77%	1	
➢ Personal development plan review	94%	1	
➢ Feedback from colleagues	77%	1	
➢ Feedback from patients	88%	1	
➢ Review of complaints and complements	95%	1	
In terms of safety assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Continuing professional development activities	89%	1	
➢ Quality improvement activities	89%	1	
➢ Significant events (any unintended or unexpected event, which could or did lead to harm of one or more patients. This includes incidents which did not cause harm but could have done (ie: near miss), or where the event should have been prevented. This can also be any serious incidents experienced that led to a change in the doctors' practice or demonstrate insight and learning	77%	1	
➢ Feedback from colleagues	71%	1	
➢ Feedback from patients	88%	1	
➢ Review of complaints and complements	89%	1	
In terms of quality assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Continuing professional development activities	83%	1	
➢ Quality improvement activities	88%	1	
➢ Feedback from colleagues	No consensus reached		R1: 59% 29% 12% R2: 56% 16% 28% Discussed in FG
➢ Feedback from patients	76%	1	
➢ Review of complaints and complements	88%	1	
In terms of communication assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Feedback from colleagues	83%	1	
➢ Feedback from patients	82%	1	
➢ Review of complaints and complements	94%	1	
In terms of partnership and teamwork assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Feedback from colleagues	82%	1	
➢ Review of complaints and complements	89%	1	

In terms of trust assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity.			
➢ Feedback from colleagues	77%	1	
➢ Feedback from patients	82%	1	
➢ Review of complaints and complements	94%	1	
Section B: The context within which medical relicensing in Egypt operates			
➢ The Egyptian health system information infrastructure, in its current form, is developed to the extent that is capable of data collection provision for doctors' performance measurement	70%	1	
➢ National medical information management systems in Egypt support collecting data on individual doctors' performance	71%	1	
➢ The attitudes that currently exist within the Egyptian medical system is one of performance improvement	No consensus reached		R1: 29% 12% 59% R2: 22% 17% 61% Discussed in FG
➢ The culture that currently exist within the Egyptian medical system is a reprimanding one (ie: one of that is designed to catch doctors out to discipline them) rather than one to identify poor performance early to improve and develop	No consensus reached		R1: 41% 29% 30% R2: 45% 33% 22% Discussed in FG
➢ The culture that currently exist within the Egyptian medical system encourages improvement and development if poor performance is detected.	77%	1	
➢ There is public and patient pressure to improve doctors' performance in Egypt.	No consensus reached		R1: 59% 29% 12% R2: 61% 22% 17% Discussed in FG
➢ Medical and healthcare institutions are adequately prepared to support the roll out of medical relicensing in Egypt	No consensus reached		R1: 35% 12% 53% R2: 28% 11% 61% Discussed in FG
➢ Medical and healthcare professionals are adequately prepared to undertake medical relicensing in Egypt	71%	1	
➢ There is clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt	78%	2	
➢ There is clear communication and engagement on a national level to inform and engage doctors and healthcare professional stakeholders regarding the next steps to undertake medical relicensing in Egypt	71%	1	

Source: Author
Legend: Green = agreed/strongly agreed, Yellow=neither agreed nor disagreed Red= disagreed/strongly disagreed

9.3 Key findings

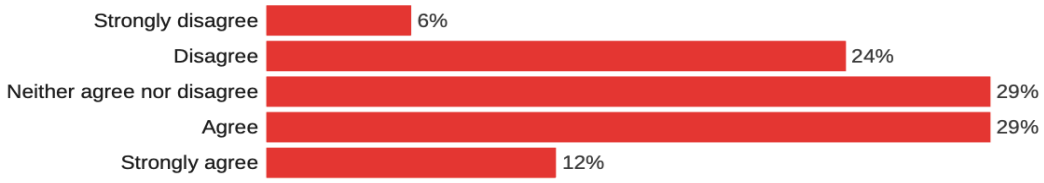
Out of a total 78 question in the first-round questionnaire, 18 questions did not reach consensus in the participants' answers (23%) while 60 questions reached consensus (77%). Disagreement was predominantly recorded in domains two (seven questions) and three (ten questions) which focused

on the participants' perception of how medical relicensing will take shape in Egypt, and what the participants' considered to be the priorities to support effective implementation of relicensing in Egypt, including their recommendations for an appropriate and acceptable approach. This is consistent with what was found in the literature and discussed earlier (chapters six and seven) in terms of heterogeneity in approaches to go about assessing performance, as well findings from the preceding semi-structured interviews study (chapter 8) in terms of consistency of information and knowledge in the public sphere in Egypt regarding medical relicensing.

In the first round participants did not reach consensus regarding whether medical relicensure should be an assessment *of* learning, i.e.: summative assessment, such as a graded assignment or exam (41% strongly agreed/agreed, 29% neither agreed mor disagreed, and 30% strongly disagreed/disagreed). This lack of consensus carried through to the second round as well and discussed in the focus group (please refer to table 9.3 for results across all rounds). In contrast, consensus was reached in terms of medical relicensure should be an assessment *for* learning (i.e.: formative assessment, such as activities to facilitate reflection and professional development) with 71% of the participants either strongly agreeing or agreeing. In response to the question 'I believe that relicensing in Egypt has clearly defined objectives' only 12% strongly agreed/agreed, 39% neither agreed or disagreed, while 59% overall strongly disagreed/disagreed. There was also discrepancy in terms of their belief that relicensing in Egypt has clearly defined objectives (figure 9.1) and has been adequately planned and prepared for to monitor once it's launched (figure 9.2); this lack of consensus for both of these questions carried through all three rounds clearly showcasing the patchy approach to communication which was discussed in the previous chapter. The weakness in communication regarding the objectives, process and parameters of medical relicensing can also be corroborated with the consensus reached in response to the question 'I can confidently describe the components and processes of relicensing in Egypt' which showcased 83% strongly disagree/disagree.

Figure 9.1: Participants responses to the definition of objectives of medical relicensing in Egypt:

Q1.4 Medical relicensure should be an assessment ***of*** learning (i.e.: summative assessment, such as a graded assignment or exam)



Source: Author

Figure 9.2: Participants responses to preparation in place to monitor relicensing once it's launched:

Q2.6 There has been adequate planning and preparation to monitor the roll out of relicensing once it's



Source: Author

It was noteworthy to observe that, although there was lack of consensus, although arguably the majority of responses were in the disagreement segment, in regards to the adequacy in planning and preparation to monitor medical relicensing once it's launched (Figure 9.2), there was clear consensus amongst participants that the adequacy of preparedness and preparation to enable participating institutions and individuals to effectively implement and undertake relicensing in Egypt is lacking -- 71% of participants strongly disagreed/disagreed that there has been adequate preparedness and preparation to enable participating institutions and individuals to effectively implement and undertake relicensing in Egypt (table 9.3). This, once again, denotes the underdeveloped communication strategy in place, including both individual and institutional guidance, which is instrumental to support effective implementation and buy-in, and highlights the importance of partnership and collaboration amongst all the stakeholders involved.

Consensus was also not reached in terms of participants perceptions and beliefs regarding the purpose of relicensure and whether it was likely to produce effects such as improving patient safety and quality, can potentially detect emerging sub-standard, dangerous, or table practice and take

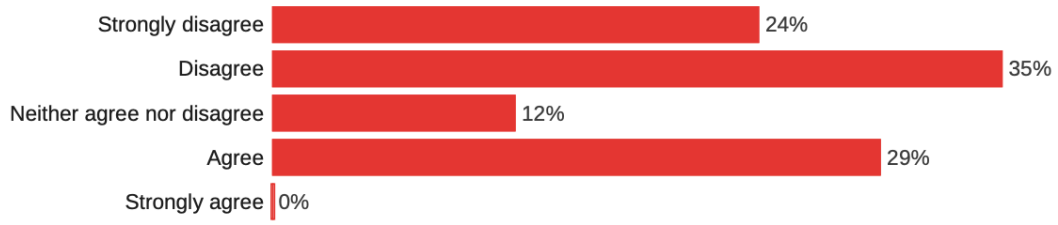
effective action at an early stage before patients come to harm and encourage a culture of self-critique and transparency (table 9.3).

In terms of key priorities to support effective implementation of relicensing in Egypt, particularly in regard to the content of medical relicensing, consensus was reached in terms of most identified activities that must be included as part of medical relicensing in Egypt (i.e.: those that evaluate knowledge, skills, performance, safety, quality and teamwork), except for elements the 'communication' and 'trust' (table 9.3). At a more granular level, however, when participants were asked about different options for activities that they think should be included within knowledge evaluation, no consensus was reached in terms of the choices of 'written or oral exam' while consensus was reached in terms of continuous professional development as well as quality improvement activities (table 9.3). This corroborates with the findings in chapter six, and links to the synthesis undertaken demonstrating how experiential and transformative learning can influence practice for continuous improvement.

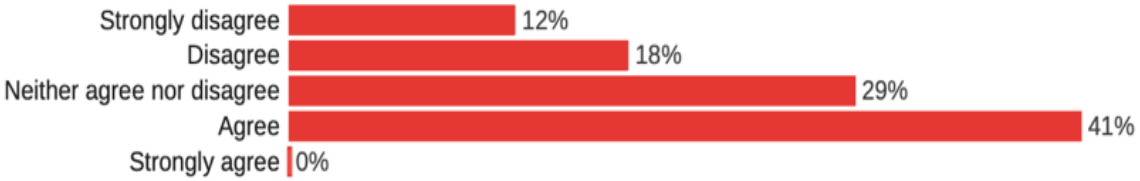
In terms of the context within which medical relicensing in Egypt operates, opinions diverged in terms of whether public and patient pressure currently exists to improve doctors' performance in Egypt (59% strongly agreed/agreed, 29% neither agreed nor disagreed, and 12% strongly disagreed/disagreed), as well as in terms of whether the existing professional culture is one of performance improvement versus a reprimanding one (i.e.: one of that is designed to catch doctors out to discipline them) (figure 9.4) This underscores the importance of socio-cognitive learning and self-efficacy in shaping behaviour and the attitude towards improvement, which, as discussed earlier in chapter six and eight and demonstrated in the revised CMO-C in figure 8.3 in the preceding chapter, are important mechanisms that can trigger and creating different causal pathways that affects the outcomes of relicensing.

Figure 9.3: Participants responses regarding perceptions and attitudes that currently exist within the Egyptian medical system towards performance improvement and development:

Q3.12 The attitudes that currently exist within the Egyptian medical system is one of performance improvement



Q3.13 The culture that currently exist within the Egyptian medical system is a reprimanding one (ie: one of that is designed to catch doctors out to discipline them) rather than one to identify poor performance early to improve and develop



Source: Author

Finally, there was also clear disagreement in terms of perceptions regarding preparation of medical and healthcare institutions to support the roll out of, and undertake medical relicensing which was echoed in the lack of consensus seen in terms of participants responses regarding the existence of a clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt (table 9.3).

In the second round, out of the total 18 question being re-rated from the previous round, 15 questions remained as not reaching consensus in their answers (83%). The remaining 15 questions informed the topic guide for the focus group discussion and were discussed amongst those who took part in the focus groups. Areas of disagreement in round two persisted predominantly within the area of participants' perception of how medical relicensing will take shape in Egypt and their priorities for the way forward, and although consensus (as defined in this study if ≥ 70% of participants agreed/strongly agreed or disagreed/strongly disagreed with a statement) was not achieved, many statements reached 65% in terms of agreement, denoting a shift towards a homogenous view. The three questions in round two where consensus has been reached were those relating to the participants perception regarding the adequacy of planning and preparation to evaluate the impact of relicensing once it's rolled out (table 9.4) and the availability of clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt (table 9.5) whereby opinions converged towards disagreement. Consensus was also reached int terms of the importance of one of the proposed activities that must be included as part of medical relicensing in Egypt (communication) (table 9.6). Tables 9.4, 9.5, and 9.6 also expand on the

difference in percentages of responses between rounds one and two to demonstrate the convergence/divergence in opinion across both rounds.

Table 9.4: Comparative results for Q2.3 There has been adequate planning and preparation to evaluate of the impact of relicensing once it's rolled out:

Round 2 results				
Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
11.11%	5.56%	11.11%	44.44%	27.78%
Overall Agree		**Neither agree nor disagree**	**Overall Disagree**	
16.67%		**11.11%**	**72.22%**	

Round 1 results		
Overall Agree	**Neither agree nor disagree**	**Overall Disagree**
6%	**29%**	**65%**

Source: Author
Legend: Green = Agreed/strongly agreed, Yellow=Neither agreed or disagreed Red= Disagreed/strongly disagreed

Table 9.5: Comparative results for Q3.18 There is clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt:

Round 2 results				
Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
0%	14%	8%	61.11%	16.67%
Overall Agree		**Neither agree nor disagree**	**Overall Disagree**	
14%		**8%**	**77.78%**	

Round 1 results		
Overall Agree	**Neither agree nor disagree**	**Overall Disagree**
12%	**41%**	**47%**

Source: Author
Legend: Green = Agreed/strongly agreed, Yellow=Neither agreed or disagreed Red= Disagreed/strongly disagreed

Table 9.6: Comparative results for Q3.1 Activities that address the following elements must be included as part of medical relicensing in Egypt: a. Communication

Round 2 results				
Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
16.67%	61.11%	11.11%	0%	11.11%
Overall Agree		**Neither agree nor disagree**	**Overall Disagree**	
77.78%		**11.11%**	**11.11%**	

Round 1 results		
Overall Agree	**Neither agree nor disagree**	**Overall Disagree**
59%	**23%**	**18%**

Source: Author
Legend: Green = Agreed/strongly agreed, Yellow=Neither agreed or disagreed Red= Disagreed/strongly disagreed

It was interesting to note that for question Q2.3 (There has been adequate planning and preparation to evaluate of the impact of relicensing once it's rolled out) that approximately 10% of views gravitated towards agree/ strongly agree in comparison to 7% more views gravitating towards disagree/ strongly disagree in the second round, as seen in table 9.4, which could be

explained by the results exhibited in table 9.5 (comparative results for Q3.18 'There is clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt') which demonstrate a clear 20% increase in disagreement (versus 2% increase in agreement) in regard to messaging and communication relating to relicensing.

9.4 Discussion

I set out to examine and generate consensus around how relicensing as a tool can be used to improve physicians' performance, in order to produce key considerations and priorities to support effective implementation of medical relicensing in Egypt. I captured this data through investigative consensus around how relicensing as a tool can be used to improve physicians' performance from local experts, and current practitioners in Egypt, as well as identify key context-specific and context-sensitive recommendations. The analysed findings from this modified Delphi study informed the final phase of this PhD inquiry, which enabled the development of a co-produced evidence-informed conceptual framework for medical relicensing in Egypt. The following are key reflections:

First, there is overwhelming agreements across the board that a process of periodic review of physicians' competence, and up-to-date professional knowledge and skills, is necessary rendering professional accountability a current priority. This means that a regulatory intervention such a relicensing is a step in the right direction, particularly if it encompasses what were conceded to be imperative components of such process, namely evaluation of knowledge, skills, performance, safety, quality, communication, partnership and teamwork, and trust with colleagues and patients. It's critical to highlight that the overall direction of travel that relicensing ought to embody, as strongly conveyed by experts, is one that fosters a mind-set of growth, and enables continuous development and improvement in skills and practices. To realise this, the design of the relicensing process should be geared towards an assessment for learning, rather than of learning, and for it to include components to empower physicians to utilise their agency to improve their skills and practice s. Drawing on findings from earlier studies in this thesis (chapter six) these components therefore should include elements that trigger critical, deep, and transformative reflection, as well as behavioural, cognitive, and emotional changes, if the desired effect is to be achieved. Examples of such components include reflective practice activities, knowledge sharing and interdisciplinary collaboration, mentoring and peer support activities, professional development plan development, multidisciplinary team-based learning, and collaborative learning, which all allow the process to be

more responsive to the unique characteristics and learning needs of the physicians. Such approaches and activities have the potential to nurture a collaborative learning culture where physicians can benefit from the collective wisdom of their community of practice, find innovative approaches to improve their performance, as well as promote continuous learning and improvement, all the while they practice in a supportive environment where they can find encouragement, feedback, and recognition from their peers, which reinforces a collective commitment to excellence. What's currently understood for relicensing to entail (i.e.: 250 hours of continuous professional development and training) would therefore wholly not suffice and renders the potential for such a regulatory intervention unfulfilled, as conceded.

Secondly, the conspicuous lack of communication, and clarity, in terms of the purpose, process and procedures related to medical relicensing (both on an individual and an institutional perspective) is a key area of concern. Uncertainty regarding the majority of aspects of medical relicensing in Egypt still persists, two years on from data collected previously (chapter eight), amongst most cadres of the healthcare profession. This also extends to scarcity in communication to inform adequate preparedness and preparation in order to enable participating institutions and individuals to effectively implement and undertake relicensing, to monitor the roll out and impact of relicensing once it's launched, and to evaluate it. More effective information sharing and support to physicians and healthcare institutions in preparation and implementation is not only critical for this intervention to be operationally viable, but it's also imperative to facilitate acceptability, buy-in, and adoption.

Lastly, context-specificity, and context-sensitivity, is at the heart of making this work. It's in the interest of everyone (patients, physicians, regulatory bodies, academic and healthcare institutions) for the Egyptian healthcare system to progress and rise to the challenge of attempting to quantify health workforce performance in an equitable, comprehensive, and impactful manner. To that end, key considerations and key priorities which are locally relevant to the Egyptian context are paramount to be seriously considered and incorporated.

Some of these context-specific, and context-sensitive key considerations and key priorities were identified by participants in this study, which include:

Key considerations for the way forward include:

1. To expand the functionality of relicensing so that the 250 hours of CPD and training includes quality improvement activities, feedback (from patients and peers), communication, review of complaints and complements, reflection which can address and enlighten practice, skills, safety, partnership and teamwork, and trust with colleagues and patients.
2. To promote and foster a culture of improvement and commitment to excellence in practice by embedding supportive mechanisms to empower and motivate physicians to improve performance.
3. To invest in monitoring and evaluation through development of the national health information systems, more specifically to purposefully collect and link standardized electronic health and medical records and data, to improve data quality, standardization, and linkages, and to embed analysed data in informed decision-making in order to enable physician-linked performance data and improve interoperability across the healthcare system tiers.

Key priorities for the way forward include:

1. To develop and disseminate a clear and specific communication strategy detailing the purpose, process, procedures, and timelines for relicensing. This should include detailed separate guidance on preparedness, roll out and evaluation for supporting institutions, and requirements, scope, and responsibilities of physicians. This should also include a guidance and training instruction to enable smooth onboarding for all relevant stakeholders.
2. To meaningfully engage with supporting institutions to support them develop and expand their capacity to train physicians and provide opportunities for continuous professional development.
3. To foster dialogue and partnership across stakeholders to engender an inclusive and supportive environment geared towards performance improvement which reinforces a collective commitment to excellence.

9.5 Strengths and limitations

To the best of my knowledge, this is the first study to identify and capture comprehensive and detailed information through investigative consensus around how relicensing as a tool can be used to improve physicians' performance from local experts, and current practitioners in Egypt. This is also the first research effort to ascertain context-specific and context-sensitive key considerations,

and key priorities, to support effective implementation of this policy intervention and to identify recommendations to navigate through the enablers and barriers. The findings from this study also corroborates findings from previous studies and chapters in this thesis, particularly the scoping review study which unpacked the body of evidence around how relicensing, and variations of it work, and in what ways produced its effects, and adds further specificity and value to the context of Egypt making its evidence informed contribution noteworthy and considerable to inform future plans.

Although this was a small-scale study, participants were sampled from across Egypt, and from across a range of organisations, so as the breadth of views could be explored. It's important to note that this study reports on a very specific format of medical relicensing which is specifically relevant to Egyptian perspective and setting, and that these views cannot be generalised to other health systems. It's also important to note that although the modified Delphi can be a valuable tool for gaining consensus and insights from experts in a particular field, it has its limitations, weaknesses, and biases. For example, despite effort sampling participants from across Egypt, and from across a range of organisations, participants may still not fully represent the spectrum of stakeholders involved in medical relicensing in Egypt. Furthermore, the participants involved may have biases based on their specific areas of expertise, or professional backgrounds, which may potentially lead to an overemphasis on certain aspects of medical relicensing while discounting others.

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In this chapter I ascertained and generated consensus around key consideration and priorities to support effective implementation of medical relicensing in Egypt. More specifically, I examined and generated consensus around how relicensing as a tool can be used to improve physicians' performance and discern the associated opportunities and challenges. This chapter is informed by the findings and synthesis from the modified Delphi study which in turn informed the final phase of this PhD inquiry, enabling the development of a co-produced conceptual framework demonstrating how relicensing is expected to affect the performance of physicians in Egypt, and discerning the associated opportunities and challenges. The findings from this study can also be used to inform future exploratory studies into physician and patient engagement with medical relicensing and the expanding role of health system organisations in supporting physician performance management.

In the next chapter I consolidate the synthesised findings from across all studies constituting the body of this work and introduce a new model for medical relicensing in Egypt which is intended to be used to support the progress of physician performance improvement efforts at the national level.

CHAPTER 10: A FRAMEWORK FOR MEDICAL RELICENSING IN EGYPT

10.1 Introduction

Conceptual clarity which can be configured into an outline for action intended for the review, monitoring and evaluation of performance progress is of vital importance to enable a clear and systematic approach to implementation, and to allow for priority actions and decisions to be implemented as planned. In light of the evidence generated and synthesised in this thesis of study, a medical relicensing conceptual framework for Egypt was developed in order to provide evidence informed guidance translational to policy, education and practice.

The framework sets out the broad areas which should be addressed in medical relicensing in Egypt (figure 10.1). It is anchored by the realist theory of causation and illustrated using the Donabedian model for quality of care (Donabedian 2005) which underscores its evaluative perspective, and its potential to be used for monitoring progress. It reflects the multiplicity of components, features and characteristics that should be reflected in medical relicensing and the processes at work. The framework itself, and the suggested components for the relicensing portfolio that follow, crosscuts medical relicensing of all specialities in Egypt in an all-encompassing manner, however the accompanying menu of measurements is intended to assess, plan, and prioritise measures of physicians' performance in primary care. The framework builds on the revised CMO configuration which provides structurally cohesive explanations of the practical realities and challenges involved in complex interventions such as relicensing, and draws on the exhaustive realist perspective of complexity, and the number of different factors considered that underpin it. (Pawson, 2013) These factors include volition (i.e.: people make different choices and these choices vary based on a plethora of factors), context (i.e.: underlying circumstances which can have both micro and macro scopes), time (i.e.: the history behind how the intervention came about and the influence of that evolutionary process on how the intervention functions), and rivalry (i.e.: interaction with existing interventions or programs). It also builds on the revised program theory which theorises medical relicensing akin to crossing a chasm within which a variety of contexts are embedded, each having the potential to trigger various mechanisms which interact to produce diverse outcomes.

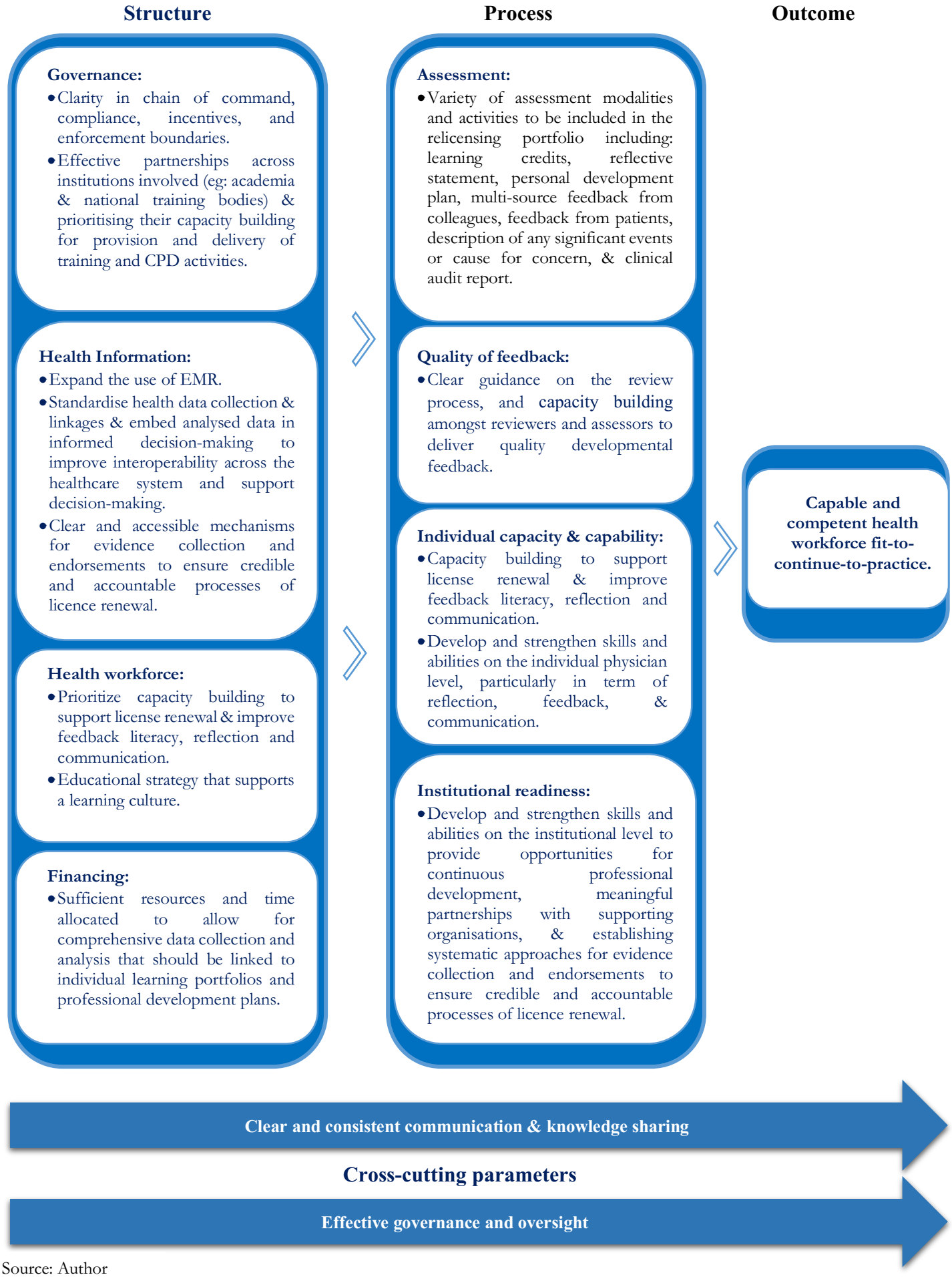
10.2 A proposed new model for medical relicensing in Egypt

10.2.1 Conceptual framework

The framework depicts the distilled synthesised new knowledge produced from the empirical studies illustrated in a configuration that demonstrates the structures (i.e.: the organisational characteristics), processes (i.e.: the enablers for success), desired outcome, and cross-cutting parameters for progress. As discussed earlier in this thesis, relicensing itself, as a regulatory intervention, has limited reach and scope, if the background features that underpin and shape the mechanisms through which the intervention works are not designed in a way that enable and encourage improvement in performance. The close interaction between the contexts, mechanisms, and processes that produce change warrant focus on the interplay between such factors as they have a direct and substantial impact on physicians' experiences, reasoning for their choices, and ultimately behaviours moving forward.

The aim of the framework is to support the progress of physician performance improvement efforts at the country level. The objectives are to: 1. Illustrate the relationship between the moving parts, features, and actors involved in medical relicensing in Egypt, showing a direction of influence that link structures, process, and outcomes, 2. Provide a structure that can be used to review, monitor and evaluate national regulatory interventions intended to progress physicians performance, and 3. Form the basis of a standardized approach for medical relicensing in the country. The added value of this framework comprises leveraging global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, as well as health systems, and crystalising them in a locally relevant manner to the Egyptian setting.

Figure 10.1: Medical relicensing conceptual framework for the Egyptian health system



Source: Author

Alongside the framework an initial menu of performance measurements for primary care was also developed to accentuate the frameworks' utility, and readiness to use on a speciality-focused level. The menu of performance measurements for primary care offers practical, direct, and indirect, measures of assessment that can be either feasibly realizable and/or embedded within the processes of the Egyptian health information boundaries currently in place. Primary care and primary care physicians are the points of focus in this PhD thesis of study, to offer a well-defined medical speciality specific context, insights, and perspectives. The selected measurements can capture and/or realistically determine complimentary aspects of performance rending them, all together, an as-inclusive-as-possible depiction of performance which can be adapted and adopted to other specialities, and therefore provide a prototypical exemplar for replicable approaches for individual-level performance assessment that can be used for other specialities across the Egyptian health system.

As demonstrated in figure 10.1, the 'structures' in this framework are articulated in the language of the WHO health system building blocks to focus priorities in a delineated fashion, and to create an opportunity to align a national framework with global linguistic convention which can be used to track and monitor progress towards UHC and health related SDGs. The structures constitute governance, health information, health workforce and financing, and comprise specific priorities for each component respectively. The 'processes' underscore the enablers for successful and sustainable operationalisation of medical relicensing in Egypt which can effectively facilitate a capable and competent health workforce that is fit-to-continue-to-practice. The processes focus on the key areas for transformation and are underpinned by the interaction between the contexts (C), mechanisms (M) and outcomes (O) configuration components of physicians' performance regulatory interventions, and their relationship with physicians' performance in the country. The processes incorporate the diversity in assessments, individual and institutional investment in capacity building and skills development, and the key role of partnerships across stakeholders.

Finally, the cross-cutting parameters represent overarching considerations which can facilitate and accelerate progress. These include clear and consistent communication, effective governance, and oversight. The communication parameter, particularly at the earlier stages of roll out, encompasses messaging around the purpose, process and procedures required to undertake medical relicensing, and at a later stage draws more attention on knowledge sharing through monitoring and evaluating the process, and lessons learned for review. The governance parameter focuses on command-and-control considerations, particularly those pertaining to effective enforcement, authority, and accountability on a national level.

10.2.2 Components of the medical relicensing portfolio

As attested and reasoned earlier in this thesis, what's currently understood for relicensing to entail renders the potential for such a regulatory intervention unfulfilled, and that expanding the functionality of relicensing so that the 250 hours of CPD and training includes elements that can reflect knowledge, skills, performance, safety, quality, communication, partnership, teamwork, and trust with colleagues and patients is imperative. To realise this, the design of the relicensing portfolio requirements should therefore include components such as reflective practice activities, professional-development-plan development, and multidisciplinary team-based learning, which all allow the process to be more responsive to the unique characteristics and learning needs of the physicians. To reiterate, as informed by the evidence generated and argued in chapter six, such approaches and activities have the potential to nurture a collaborative learning culture where physicians can benefit from the collective wisdom of their community of practice , find innovative approaches to improve their performance, as well as promote continuous learning and improvement, all the while they practice in a supportive environment which reinforces a collective commitment to excellence. In the context of Egypt, such examples of requirements, or components, of the medical relicensing portfolio can take the form of:

- ✓ A short statement of purpose detailing the physician's professional role(s), relevant professional and/or academic/research interests and achievements, and other fundamental details.
- ✓ Evidence of effective and active participation and learning credits in activities, events, and training in the relevant discipline with a focus on outcomes rather than inputs. Activities must cover the whole of the physicians' practice and be tailored to their scope of practice and needs, must be supplemented with a short reflection on what was learned from the activity and how this could support maintain or improve the quality of the physicians' practice.
- ✓ Feedback from colleagues and patients.
- ✓ A personal-development-plan that includes a detailed action plan and realistic targets for the next five years using a clearly defined structure (for example: the SMART framework, i.e.: specific, measurable, achievable, relevant, and timely) which align with the learning needs the physician identified, and consideration of how their skills and practice is expected to change as a result of the developmental activity. The detailed action plan may include attending courses or conferences, participating in mentorship or coaching programs, undertaking research projects, or engaging in quality improvement initiatives, as well as identification of the resources and support they need to successfully implement that plan, for example: access to

educational materials, funding for training programs, mentorship opportunities, or support from colleagues and supervisors.

- ✓ After the first relicensing cycle, and from the second relicensing exercise onwards, a short statement reflecting on the progress made since the previous cycle, which aligns with the previous personal-development-plan, should be attached.
- ✓ A description of formal compliments and complaints. Compliments should be reflected upon to identify areas of strength, good practice, and areas for development, and complaints should include any significant events and changes in practice as a result.

10.2.3 A menu of measurement for primary care

As discussed in detail in chapter seven, evaluating individual physicians' performance is a challenging task, and much of that challenge is attributed to the context and environment physicians operate within, which is dynamic, continuously changing and evolving with new illnesses emerging, new technology developing in a rapid manner, and the numerous influences affecting performance beyond individual capabilities (for example: system-wide, or patient-related factors). This renders accurate metrics that can reliably quantify individual level performance scarce, and caution must be considered when utilising them for profiling or for accountability purposes. It's also worth mentioning that multiple assessment methods and a variety of data source should be used to mitigate challenges related to content specificity, bias, and data inaccuracies. In the context of Egypt, these methodological challenges are exacerbated by the limitations in the health information and governance infrastructural boundaries, and the absence of accountable and uniform methods for data collection and performance evaluation rendering the feasibility of effective assessment of practice on the individual level limited in scope. Nevertheless, pending an expansion in electronic health and medical records, more harmonised methods for data collection, analysis and comparisons, and more streamlined health and medical records linkages, some direct and indirect measures of performance can be used in the context of individual physicians' performance, primarily those that do not require high tech or complex health information systems. Some of these measurements, which are particularly relevant to the primary care setting, include direct (ie: those that evaluate actual, or ongoing, practice in the real-world clinical settings) and indirect explicit assessment methods as outlined on table 10.1.

Table 10.1: Menu of measurements for primary care individual physician level assessment:

Direct measures	Indirect measures
Multi-source feedback	Knowledge, skill, and reasoning tests
Practice logs or portfolios	Simulation exercises
Analysing significant events	
Mini-clinical evaluation exercises	
Patient satisfaction interviews or surveys	

Source: Author

In terms of direct and indirect measures of assessment, those identified in table 10.1 were particularly chosen due to the fact that they can be either easily realizable and/or embedded within the processes and health information boundaries currently in place, as well as their ability to capture and/or determine complimentary aspects of performance rending them, all together, an as-inclusive-as-possible depiction of performance.

These measures have been discussed in further detail in chapter seven and their purpose and usefulness reviewed in more depth. It's notable however to expand on two of the direct measure in this menu of measurements suggested to be used in the context of individual physicians' performance and these are multisource feedback, and analysing significant events given their potential to influence the professional culture as well as shape behaviour and attitude towards improvement, which, as elaborated on previously, is an important mechanisms that can trigger causal pathways that affects the outcomes of relicensing. Multisource feedback, as examined hitherto, can be used to evaluate performance using a more supportive and developmental approach by means of feedback to improve and progress practice. This workplace-based assessment in the Egyptian context can encompass feedback from colleagues, peers, and patients, which can be collected in the form of a survey through readily available tools such as the mini-assessment tool (mini-PAT), the patient satisfaction questionnaire (PSQ), or the team assessment of behaviours (TAB) mentioned previously, or a bespoke tool that can be developed fairly easily. Using the Egyptian health system lens, 'significant events' here can be thought of as the experiences that can impact practice and require reflection, learning, and improvement which links to what was described earlier in the components of the portfolio in section 10.1.2. These 'events' can encompass documenting and reflecting on adverse patient outcome (for example: the impact on patient care in terms of severity, frequency, and patterns), and clinical Incidents (for example: clinical errors, near-misses, or complications in patient care, their severity and frequency) to identify areas for improvement.

10.3 Discussion

The first-of-its-kind new model for medical relicensing in Egypt builds on the developed and tested preliminary conceptual framework derived from the CMO configuration specifically produced for this research and represents, in an illustrative manner, the consolidation of the synthesised findings from across all studies constituting the body of this thesis of study. The framework demonstrates the relationship between the moving parts, features, and actors involved in medical relicensing in Egypt which sheds a light on the direction of influence that link structures, process, and outcomes, all of which, to the best of my knowledge, have never been accomplished before for the context of Egypt.

The new model for medical relicensing in Egypt can be used by policy makers to support the progress of physician performance improvement efforts at the country level in the following ways: 1) As an evidence informed foundation for a standardized approach for medical relicensing in the country which leverages global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, as well as health systems, that is crystalised in a locally relevant manner to the Egyptian setting, 2) As a framework for action that can be used to review, monitor and evaluate national regulatory interventions intended to progress physicians performance, and 3) To align as a national framework with global linguistic convention which can be used to track and monitor progress towards universal health coverage and health related sustainable development goals.

The structures, i.e.: the organisational characteristics, in the framework constitute governance, health information, health workforce, and financing which comprise key priorities elicited and discussed earlier in this thesis. These include key features identified and conceded throughout this research as galvanising policy levers particularly to: 1) Strengthen governance through integrating compliance as a distinct and core feature of operationalisation, and to foster dialogue to enable within, and cross, sector partnership, as well as support implementation though establishing clear strategic vision and national guidance, 2) Improve and expand the health information system, through purposefully collecting and linking standardized electronic medical records and data, as well as improve data quality, standardization, and linkages and to embed analysed data in informed decision-making in order to enable physician-linked performance data and improve interoperability across the healthcare system tiers, 3) Prioritize capacity building on the institutional and individual level to support license renewal & improve feedback literacy, reflection and communication, and design an educational strategy that supports a learning culture, and 4. to

prioritise investment in sufficient resources both monetary and non-monetary, including time allocated to allow for comprehensive data collection and analysis.

The processes, i.e.: the enablers for success, emphasize the key areas for transformation, as underpinned by the interaction of the CMO components of physicians' performance regulatory interventions and their relationship with physicians' performance in the country, and distil the fundamental strategic areas for investment for successful and sustainable operationalisation of medical relicensing in Egypt. To empower a capable and competent health workforce that is fit-to-continue-to-practice strategic planning for processes that incorporate the diversity in assessments, individual and institutional investment in capacity building and skills development, and emphasise the key role of partnerships across stakeholders are highlighted. Specific policy levers include the establishment of developmental and supportive strategies that can support and encourage physicians to facilitate self-review, diversifying assessment modalities and activities to be included in the relicensing portfolio, the provision of clear guidance for policy, processes, and timescales, as well as clear roles and responsibilities for individuals and institutions involved. Suggested policy levers also include the development and strengthening of skills and abilities on the individual physician level, particularly in term of reflection, feedback, communication to promote good practice, and encourage a culture of reflection, and improvement. These key areas for transformations and enablers for success draw on the exhaustive evidence generated for this thesis and highlights that learning and development is a process, rather than a discrete event, and is based on, and requires, cognitive, behavioural, and social scaffolding as well as galvanising a sense of agency in the physicians to enable meaningful progress which is relevant and sustainable. Also central to the principles that underscore the processes and the strategic proposals associated with them is that carefully crafting and diversifying assessment modalities and structural designs has the potential of not only evaluating and capturing performance data that is as closely representative as possible to their actual performance, but also creates opportunities to engage in continuous learning, and promoted life-long self-improvement, and professional development.

The cross-cutting parameters illustrate important overarching considerations which can facilitate and accelerate progress and comprise communication, and command-and-control parameters which have been discussed in further detail earlier in this thesis. The communication parameter particularly address the conspicuous lack of communication, and clarity, in terms of the purpose, process and procedures related to medical relicensing (both on an individual and an institutional perspective) and the scarcity in communication to inform adequate preparedness and preparation in order to enable participating institutions and individuals to effectively implement and undertake

relicensing, to monitor the roll out and impact of relicensing once it's launched, and to evaluate it. More effective information sharing and support to physicians and healthcare institutions in preparation and implementation is not only critical for this intervention to be operationally viable, but it's also imperative to facilitate acceptability, buy-in, and adoption. The governance and oversight parameter highlights the need, and importance, of system wide command-and-control policies for evidence collection and endorsements to ensure credible and accountable processes of licence renewal and consistent methods of quality evaluation which must be supported by clear governance mechanisms particularly those pertaining to effective enforcement, authority, and accountability on a national level.

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In this chapter I consolidated the synthesised findings from across all studies constituting the body of this work and introduced a new model for medical relicensing in Egypt which is intended to be used to support the progress of physician performance improvement efforts at the national level. The new model for medical relicensing in Egypt builds on the developed and tested preliminary conceptual framework derived from the CMO configuration specifically produced for this research and is supplemented with a proposal for more all-encompassing components for the medical relicensing portfolio, as well as a menu of measurements for primary care physician performance. In the next chapter I discuss my synthesized findings in the context of my thesis questions, and contextualise this thesis of study, and its relevance. I also reflect on the need for the contribution this thesis makes, its utility, its strengths, and limitations, as well as explain the implications of the new knowledge I produced for scholarship, policy, and practice.

CHAPTER 11: DISCUSSION

11.1 Introduction

There are four distinguishable forms of knowledge: theoretical (epistēmē), technical (technē), practical (praxis)(Aristotle 1996), and critical- emancipatory (Kemmis and Grootenboer 2008), each of which have a distinctive role to play in physician performance assessment given the complex, continuously evolving, and expanding nature of the field of medicine. If we expect 'good' doctors to be up to date with advances in scholarship (epistēmē), emerging evidence and skills (technē)), to be competent (praxis), alert, proactive and critically challenge themselves and their field to further develop and improve (critical- emancipatory) then how they acquire, retain, and synthesise knowledge (Gogus 2012; GMC 2013a) must be systematically supported.

The introduction of medical relicensing in Egypt is heralding a new era for health system governance in the country marked by medical education and regulation transformations, which signals a monumental shift in terms of how the Egyptian medical profession is regulated. This complex new policy intervention has, rightly so, given rise to considerable and critical protracted debate amongst health care professionals regarding the appropriate methods, the format, and the feasibility for implementing such a policy. It's clear from evidence generated in this thesis of study that there is uniform agreement amongst healthcare professionals in the country, across all tiers, from trainees to senior clinicians, that a process of periodic review of physicians' competence, and up-to-date professional knowledge and skills, is necessary, which renders professional accountability as a current priority, and a regulatory intervention such a relicensing, a step in the right direction. However, it's also clear that there is profound concern that what is currently planned for relicensing may not be fit-for-purpose, and that carefully considering context-specific attributes that are applicable to the Egyptian healthcare system and structure, and that takes into account the health workforce capacity and readiness for change, is fundamental for the way forward.

It remains however, that since the formal announcement of the introduction of medical relicensing in 2017, national medical regulatory authorities are yet to elucidate and clarify how medical relicensing in Egypt will be linked to better performance of physicians, the details regarding the process by which medical relicensing will be undertaken, and the ways through which assessment using evidence, or theoretical frameworks, will inform the development of this large-scale policy intervention. It also remains unclear how healthcare organisations and individuals will be involved in undertaking this intervention and what the plans are for the preparation and roll out, which

gives rise to many unanswered questions such as: what's the best approach to ensure that physicians' knowledge and skills are up to date? What are the power dynamics and power shifts implicated in its introduction? and even what language should be used in the policy and what does this signify?

In this PhD thesis of study, I explored the linkages between regulatory interventions and health workforce performance, examined how such interventions can produce their effects, investigated how health workforce performance is measured, as well as ascertained how and what configuration relicensing will take form in Egypt. Through the various methods and tools I have employed to generate and synthesize evidence, I have also identified key knowledge from expert stakeholders in Egypt and in the field of health workforce globally in regard to medical relicensing in Egypt to empirically inform the development and testing of an evidence-informed co-produced conceptual framework for medical relicensing in Egypt. This multi-method study is anchored by a realist informed approach investigating what works, how, for whom, to what extent, and in what circumstances, to generate locally relevant evidence to inform policy direction. This PhD study spans the broad fields of health policy, human-resources-for-health, pedagogy, performance, and behaviour change, and as such literature, theories, and evidence from these various fields have contributed to answering my research questions. New information relevant to policy, education, and practice on the prospective impact of medical relicensing of physicians in Egypt on their performance has been generated, critiqued and synthesised by means of a realist approach, anchored by a critical interpretivist process which was used to ascertain the most relevant locally sensitive and specific considerations for medical relicensing in Egypt, and to propose practical and evidence informed recommendations.

11.2 Contemplations and considerations

The methodological and philosophical approach that underpinned my research inquiry is that of realist and critical realism respectively, which allowed me to probe and investigate the nature of causation, agency, actors, entities, relationships, and the implicit, as well as explicit, realities (M. Archer et al. 2016) of regulatory interventions aimed at assessing physicians' performance. It paved the way for me to unpack what works, how, for whom, to what extent, and in what circumstances, (Pawson et al. 2004; 2005; Pawson and Tilley 1997; Pawson 2006) which allowed me to generate locally relevant evidence to inform policy direction in the context of medical relicensing in Egypt; the first such evidence of its kind.

The value I confer to this work is anchored by the principal notion that well-informed regulatory policies and governance mechanisms have the capacity to enhance health workforce performance and enrich the clinical experience for both physicians and patients, and positively contribute to health system strengthening. It is through such a progressive approach to performance improvement that quality of care can advance. The synthesis presented in this thesis, using the realist paradigm, draws on the practical realities and challenges involved in dealing with this complex intervention, and accordingly offers structurally cohesive explanations that can meaningfully support evidence-informed decision making. These structurally cohesive explanations emerge from the exhaustive realist perspective's views of complexity, and the number of different factors considered that underpin it (Pawson, 2013), mentioned previously, namely including volition, context, outcomes, and time. Using the realist informed method, my epistemological approach took into account that knowledge is derived from underlying causes and mechanisms embedded in the reality of the natural order of the world, and that 'truth' exists independently of our perceptions and constructions (Realist), however it can be further developed by knowledge constructed from our own perspectives (Constructivist). This approach guided my analysis and synthesis throughout my work to recognise the importance, and the influence, contextual factors, and mechanisms of change, have on health interventions in this theory-orientated, yet explanatory, approach to evidence synthesis. (Brennan et al., 2017) This offered meaningful and substantial new knowledge and outputs which I summarised and reflected upon below in terms of the evidence generated and synthesised in in this thesis of study and underscore what has been learned.

Physicians' performance regulation sits within a complex backdrop of relationships and interactions between doctors, regulators, the contexts within which they operate, and the multiple underlying motivations for physicians' performance regulation. This means that understanding, and balancing, these relationships, motivations, and the interests of the multiple stakeholders and beneficiaries involved, for example professional accountability, accountability to the public, health system sustainability, efficiency, and effectiveness, is central to the design and evaluation development of regulatory systems if they are to be expected to produce meaningful change and improvement. This firmly reinforces the concept that there isn't a 'one size fits all' approach to instigate performance improvement amongst physicians, and while it is important to seek out best practices and appreciate how different methods can influence change in a plethora of ways, context-specificity and context sensitivity is imperative to address local concerns, needs and cultures.

Evaluating individual physicians' performance has proved to be challenging and elusive, and the methods, and metrics, to measure and evaluate health workers' performance vary across the board rendering robust evidence on the validity and reliability of performance indicators scarce. Using primary care as an area of focus, it was clear that due to the complexity of diagnostic and referral pathways, and the multitude of influencing factors affecting it, that assessing individual physicians based on narrow performance measures can be misleading and misrepresentative, and that traditional approaches such as standardisation should be discouraged. This does not mean that the endeavour towards meaningfully evaluating performance on the individual level should be forfeited, but rather that the approach to individual level performance evaluation should be sensitive to the myriad of factors influencing it, that investments should be made to improve data availability and linkages capabilities, and that the challenges associated with validity and reliability of data, confounding, robustness, sensitivity, and specificity of metrics should be addressed. Until more robust evidence is available, particularly related to the validity and reliability of measurements, performance indicators should be considered with caution if they are to be used for profiling or for accountability purposes. It's also advised to use multiple assessment methods and include a variety data sources to mitigate challenges related to content specificity, bias, and data inaccuracies considering that using several different assessment methods, even if they are not highly standardized, is likely to provide a more accurate overall picture of performance compared to relying on a small number of highly standardized methods, which may be fraught with methodological biases, confounding and inaccuracies.

It's important to recognise and appreciate that learning and development is a process, rather than a discrete event. It's based on, and requires, cognitive, behavioural, and social scaffolding as well as galvanising a sense of agency in physicians to enable meaningful progress in a relevant and sustainable way. Carefully crafting and diversifying assessment modalities and structural designs has the potential of not only evaluating performance in a purposeful way, which is as closely representative as possible to actual performance but can also create opportunities to engage in continuous learning, promote life-long self-improvement, and professional development. Leveraging the value of physicians' insight through their active participation in defining and selecting assessment methods and performance benchmarks, can also boost their sense of agency and generate buy-in, thus promoting behaviours, practices, and attitudes that foster a growth mindset and avoids tick-boxing or game playing.

Physicians' validation systems and regulatory interventions used to attempt to quantify physicians' performance should be seen as a single cog in the vast machinery that is healthcare quality

improvement. Such regulatory interventions, even if designed purposefully and comprehensibly, can only stimulate, and support meaningful impact if other components of health system apparatuses, such as governance, health information systems, and the overall professional culture, enables and encourages such trajectory. Sufficient resources and time should be allocated to allow for comprehensive performance relevant data collection and analysis that should be linked to individual learning portfolios and professional development plans. Such data should also be aligned with, and linked, to monitoring of overall health system performance.

In the case of Egypt, evidence generated by this thesis of study demonstrate that there is a need for structured and regulated professional accountability within the health system, which the introduction of medical relicensing has the potential to realise. The introduction of a health workforce policy intervention such as medical relicensing can be of great value to enhance the safety and quality of medical practice and can be a step-change in terms of boosting opportunities for active learning, continuous medical and professional development, and upskilling physicians in Egypt, if it is designed and implemented in a fit-for-purpose and fit-for-context manner. Regrettably, what's currently understood for relicensing to entail (i.e.: 250 hours of continuous professional development and training) wholly would not suffice and renders the potential for such a regulatory intervention unfulfilled, as conceded by experts and stakeholder interviewed and surveyed in this work. Some of the essential components, according to the participants, that should be included in the Egyptian medical relicensing process include the evaluation of knowledge, skills, performance, safety, quality, communication, partnership, teamwork, and trust with colleagues and patients. It was also conceded that the overall direction of travel that the Egyptian medical relicensing ought to embody is one that fosters a mind-set of growth and enables continuous development and improvement in skills and practices. To realise this, the design of the relicensing process should be geared towards an assessment for learning and should include components to empower physicians to utilise their agency to improve their skills and practice s, and to trigger critical, deep, and transformative reflection, as well as behavioural, cognitive, and emotional changes. Bearing in mind the Egyptian health system capabilities and limitations, examples of such components could be reflective practice activities, professional development plan development and multidisciplinary team-based learning, which all allow the process to be more responsive to the unique characteristics and learning needs of the physicians. Such approaches and activities have the potential to nurture a collaborative learning culture where physicians can benefit from the collective wisdom of their community of practice, find innovative approaches to improve their performance, as well as promote continuous learning and improvement, all the while they practice in a supportive environment which reinforces a collective commitment to excellence.

It's also imperative to underscore that context-specificity, and sensitivity, is at the heart of making this work. It's in the interest of everyone (patients, physicians, regulatory bodies, academic and healthcare institutions) for the Egyptian healthcare system to progress and rise to the challenge of attempting to quantify health workforce performance in an equitable, comprehensive, and impactful manner. The numerous health system limitations, particularly in terms of health information and governance infrastructural boundaries identified in the body of evidence generated by this thesis therefore cannot be overlooked, and careful consideration in terms of what's feasible within the current scope of the Egyptian health system, and the need for the many moving parts within the Egyptian health and care system to work together must be addressed. This means that meaningful partnerships with supporting organisations, such as academia and national training bodies, who are expected to play a central role in the provision and delivery of training and development, need to be forged, and that the establishment of systematic approaches for evidence collection and endorsements to ensure credible and accountable processes of licence renewal is necessary.

Finally, the importance of clear, consistent, and coherent communication regarding the purpose, process and procedures required to undertake medical relicensing cannot be understated. Ambiguity regarding the majority of aspects of medical relicensing in Egypt still persists amongst most cadres of the medical healthcare profession. This also extends to scarcity in communication to inform adequate preparedness and preparation in order to enable participating institutions and individuals to effectively implement and undertake relicensing, to monitor the roll out and impact of relicensing once it's launched, and to evaluate it. More effective information sharing and support to physicians and healthcare institutions in preparation and implementation is not only critical for this intervention to be operationally viable, but it's also imperative to facilitate acceptability, promote good practice, strengthen public confidence, buy-in, and adoption.

11.3 Contribution to scholarship

The distilled knowledge from this PhD of study offers an evidence-informed approach to support the progress of physician performance improvement efforts at the country level. The evidence generated and synthesized through this work, ultimately leading to the development of a framework for medical relicensing in Egypt, leverages global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, & health systems which is crystalised in a locally relevant manner to the Egyptian setting. The evidence generated and synthesized through this work also demonstrates the relationship, and interactions, between

the moving parts, features, and actors involved in medical relicensing in Egypt which sheds a light on the direction of influence that link structures, process, and outcomes-- all of which, to the best of my knowledge, have never been accomplished before for the context of Egypt.

On a more granular level, each study comprising the total body of work for the PhD have a range of potential implications and applications. The findings from the scoping review for example, progressed the understanding of how regulatory interventions used to attempt to quantify physicians' performance produce their effects. However, findings from this study can also be used to inform future exploratory studies into health system governance, particularly those focusing on the impact of health workforce interventions, and the role of socio-cognitive, learning & education, and psychological theories in the structural design on physician assessment. On the other hand, findings from the systematic review, which identified meaningful, actionable information in the form of metrics for primary care physicians' performance assessment can inform future exploratory studies into primary care physician performance assessment, particularly those focusing on the role of individual-level approaches, and their role within larger system level performance methods. Finally findings from the semi-structured interviews and modified Delphi study offers first-hand insights from experts in the fields of health workforce, medical education, training, and capacity building, and those who are directly involved in the process of medical relicensing in Egypt, and can also be used to inform future exploratory studies into physician and patient engagement with medical relicensing and the expanding role of health system organisations in supporting physician performance management.

11.4 Contribution to policy and practice

This knowledge and recommendations put forward by this PhD thesis of study offer context-specific and context-sensitive considerations for the way forward for the Egyptian medical relicensing endeavour, and actionable suggestions for progress. More specifically, this encompasses: The proposed new model for medical relicensing in Egypt, the proposal for the components for the medical relicensing portfolio, and the proposal for the menu of measurements for primary care physician performance assessment.

This thesis of study also offers specific insights which further the understanding of how regulatory interventions, such as relicensing, can produce their effects, which policy makers are urged to consider as they embark on the design of such policies and interventions. More specifically, Policy makers and practitioners must take into account the complex and intricate network of relationships

and interactions among doctors, regulators, and the environments in which they operate when addressing the regulation of physicians' performance. While it is essential to explore and learn from best practices and understand how different approaches can bring about change, it is crucial to consider the unique local concerns, needs, and cultural factors. It is also imperative to recognise and appreciate that there are multiple motivations behind regulating physicians' performance, such as professional accountability, accountability to the public, health system sustainability, efficiency, and effectiveness. It is therefore incumbent upon policy makers and regulators to comprehend and strike a balance among these motivations, as well as the concerns of diverse stakeholders and beneficiaries, when developing and evaluating validation systems to ensure that significant improvements can be attained.

Furthermore, medical regulators and policy makers should recognize that learning and development are ongoing processes rather than isolated events. These processes rely on, and require, cognitive, behavioural, and social scaffolding, as well as empowering physicians to take an active role in their progress, making it both relevant and sustainable. By carefully designing and diversifying assessment methods and structural frameworks, there is the potential not only to collect performance data that closely mirrors actual performance, but also to create opportunities for continuous learning, lifelong self-improvement, and professional growth.

Lastly, it is essential to view physicians' validation systems and regulatory measures, which aim to measure and enhance physicians' performance, as integral components within the broader landscape of healthcare quality improvement. These regulatory measures, no matter how intentionally and comprehensively designed, can only effectively foster, and bolster meaningful change if other elements of the healthcare system, including governance, health information systems, and the overarching professional culture, facilitate and promote such progress.

11.5 Strengths and limitations

The strength of this PhD of study lies within its methodological rigour, it's inclusive approach to co-produce context-specific and context-sensitive findings and recommendations, and it's clear and specific actionable proposals to enhance and further develop the Egyptian medical regulatory endeavour. The use of multiple methods anchored by a realist informed approach investigating what works, how, for whom, to what extent, and in what circumstances, informed the development of the subsequent program theories; and the use of the realist logic, as well as critical

interpretivist approach, to synthesise evidence allowed for an iterative and dynamic approach to data collection, and analysis. This meant that critical scrutiny in questioning the underlying assumptions and theories was achieved throughout this body of work in a recursive and reflexive manner which further enhances the confidence and thoroughness in the findings, and in turn the inferences that can be made from them. This also enabled a deep dive into the contexts, causal mechanisms, and outcomes (intermediate and final) at play in the Egyptian medical relicensing process and dissected physicians' performance approaches at a much more granular level to expose further insights and better understanding of how physicians' performance in Egypt can be impacted by regulatory interventions to generate locally relevant evidence to inform policy direction.

To the best of my knowledge, the medical relicensing conceptual framework for the Egyptian health system developed in this body of work is the first of its kind framework that demonstrates the relationship between the moving parts, features, and actors involved in medical relicensing in Egypt which elucidates the direction of influence that link structures, process, and outcomes, and has been designed specifically to support the progress of physician performance improvement efforts at the country level. It's also the first of its kind to leverage global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, as well as health systems, and crystalises them in a locally relevant manner to the Egyptian setting. The empirical studies that informed the development of the medical relicensing framework also represent novel contributions to the literature -- to the best of my knowledge the systematic review on primary care physicians individual performance assessment is the first study attempting to ascertain how primary care physicians' performance is reported and identify meaningful, actionable information and data in the form of metrics for primary care physicians' performance assessment which therefore adds specific insights into this areas of performance assessment; the semi-structured interview study to identify and capture comprehensive and detailed information regarding the shape relicensing is expected to take, the preparation underway for relicensing, and how it's expected to affect the performance of physicians in Egypt. It is also the first research effort to offer an evidence-informed preliminary conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt; and the modified Delphi study is the first study to identify and capture comprehensive and detailed information through investigative consensus around how relicensing as a tool can be used to improve physicians' performance from local experts, and current practitioners in Egypt. It is also the first research effort to ascertain context-specific and context-sensitive key considerations, and key priorities, to

support effective implementation of this policy intervention and to identify recommendations to navigate through the enablers and barriers.

Notwithstanding the aforementioned strengths, there are several limitations to consider. In addition to what has been outlined in chapters six, seven, eight, and nine it's important to underscore the scarcity, and the lack of breadth, within the literature on relicensing and on individual level performance assessment. This paucity in evidence limits our ability to delineate how different regulatory interventions produce their effects, and the individual-based dimensions of performance from practice -based ones. Gaps remain in terms of strong evidence-based connections and causal links between improved patient outcomes, quality of care provision, or safety, and correlation between individual-level performance assessment and improvement in care provision which renders components of the program theories developed assumptive, particularly those between mechanisms and outcomes. Another likely limitation is the generalisability and usefulness of using the findings from this body of work to other health systems given its nuanced Egyptian context-- It's worth noting that although the theoretical and practical underpinnings and conceptualisations generated through realist causation can be used more widely to inform other health regulatory systems in respect to the theories, the relationships, and the dynamics between performance regulatory interventions and their impact, specific mechanisms-outcome configurations and extrapolations, particularly those within the CMO-C produced for this work, is unlikely to be transferable to other health systems.

Furthermore, it's also important to underscore methodological limitations, particularly related to the approach that underpinned the overarching research inquiry which is that of realist and critical realism respectively. The realist paradigm, while offering valuable insights into understanding causal mechanisms and contextual factors shaping outcomes, also has its limitations. In addition to contextual specificity which was mentioned earlier which can limit external validity of findings given that generalisability can be difficult, using the realist paradigm poses epistemological challenges, in terms of the understanding of how knowledge is constructed and validated. The emphasis on understanding underlying mechanisms and contexts can lead to a dynamic interpretation of reality and subjectivity in abstraction.

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In this chapter I discussed my synthesized findings in the context of my thesis questions, and contextualise this thesis of study, and its relevance. I also reflected on the need for the contribution this thesis makes, its utility, its strengths, and limitations, as well as explained the implications of

the new knowledge I produced for scholarship, policy, and practice. In the next chapter I recapitulate the key policy relevant health systems knowledge generated by this PhD of study and outline how it can be used to support the Egyptian medical relicensing endeavour.

CHAPTER 12: CONCLUSION

12.1 Summary of inquiry undertaken during this doctoral study

Concerns about quality of care, patient safety, and public confidence in the medical profession in Egypt have dominated the public and medical community discourse respectively for years, with all sides calling for more regulation and reform, rendering the introduction of a health workforce policy intervention such as medical relicensing of great value to enhance the safety and quality of medical practice. The introduction of medical relicensing in Egypt is heralding a new era for health system governance in the country marked by medical education and regulation transformations, which signals a monumental shift in terms of how the Egyptian medical profession is regulated. This complex new policy intervention has given rise to considerable and critical protracted debate amongst health care professionals regarding the appropriate methods, the format, and the feasibility for implementing such a policy, sparking widespread concern that what is currently planned for relicensing may not be fit-for-purpose, does not carefully consider context-specific attributes that are applicable to the Egyptian healthcare system and structure, and does not take into account the health workforce capacity and readiness for change. I address these considerations and concerns throughout this body of work, and in the new medical relicensing conceptual framework for the Egyptian health system. The new medical relicensing conceptual framework for the Egyptian health system illustrates the relationships, components, and linkages between structures, process, and outcomes within the Egyptian medical relicensing space, and provides a construct for reviewing, monitoring and evaluating national regulatory interventions intended to progress physicians' performance.

This PhD study spans the broad fields of health policy, human-resources-for-health, pedagogy, performance, and behaviour change, and as such literature, theories, and evidence from these various fields have contributed to answering my research questions. In this PhD thesis of study, I explored the linkages between regulatory interventions and health workforce performance, examined how such interventions can produce their effects, investigated how health workforce performance is measured, as well as ascertained how and what configuration relicensing will take form in Egypt. Through a multitude of methods and tools I have employed to generate and synthesize evidence I have also identified key knowledge from expert stakeholders in Egypt and in the field of health workforce globally in regard to medical relicensing in Egypt to inform the development and testing of a co-produced conceptual framework postulating how medical relicensing is expected to affect the performance of physicians in Egypt and the opportunities and

challenges of various strategies, ultimately resulting in the production of new model for medical relicensing in Egypt that is fit-for purpose, and fit-for-context. As a multi-method study anchored by a realist informed approach investigating what works, how, for whom, to what extent, and in what circumstances, I have generated locally relevant evidence to inform policy direction. This new information relevant to policy, education, and practice on the prospective impact of medical relicensing of physicians in Egypt on their performance has been generated, critiqued, and synthesised by means of a critical interpretivist process which was used to ascertain the most important locally sensitive and specific considerations for medical relicensing in Egypt, and to propose practical and evidence informed recommendations. As the first of its kind, an evidence-informed framework for medical relicensing in Egypt has been produced in this PhD thesis of study; this is supplemented with a proposal for more all-encompassing components for the medical relicensing portfolio, a menu of measurements for primary care physician performance, context-specific and context sensitive considerations for the way forward, as well as actionable suggestions for progress, all of which are intended to be used to support the progress of physician performance improvement efforts at the national level.

12.2 Recommendations

I believe that there's an opportunity for the Egyptian health systems' regulatory arm to embed facets into its most recent effort to improve outcomes of the overall health system that can positively contribute to improved population health and more meaningful development of physician's performance. Medical relicensing in Egypt has the potential to be a step-change in terms of boosting opportunities for active learning, continuous medical and professional development, and upskilling physicians in Egypt if it is designed and implemented in a fit-for-purpose and fit-for-context manner. To realise this, it's incumbent amongst key policy makers driving the medical relicensing agenda to consider the following:

1. Expand the functionality of relicensing so that the 250 hours of CPD and training includes quality improvement activities, feedback (from patients and peers), communication, review of complaints and complements, reflection which can address and enlighten practice, skills, safety, partnership, teamwork, and trust with colleagues and patients.

2. Develop and disseminate a clear and specific communication strategy detailing the purpose, process, procedures, and timelines for relicensing. This should include detailed separate guidance on preparedness, roll out and evaluation for supporting institutions, requirements,

scope, and responsibilities of physicians as well as include guidance and training instruction to enable smooth onboarding for all relevant stakeholders.

3. Galvanise the implementation though establishing clear strategic vision and national guidance to identify and set professional standards, values, and principles which performance assessment aligns and corresponds to.

4. Reduce fragmentation in monitoring by providing a unified monitoring framework for physicians' performance evaluation that is aligned with, and linked to, monitoring of overall health system performance, progress towards UHC and health related SDGs.

5. Collaborate with the relevant institutions, including those outside the healthcare system, for example the Ministry of data and communication, to work towards improving and expanding the health information infrastructure to purposefully collect and link electronic medical records and data, to improve data quality and flow of information, and to embed analysed data in informed decision-making in order to facilitate physician-linked performance data and to improve interoperability across the healthcare system tiers.

6. Collaborate with the relevant institutions including MoHP, the EMS, Universal Health Insurance Authority, the General Authority of Healthcare, the General Authority for Healthcare Accreditation and Regulation to strengthen health system governance and integrate compliance as a distinct and core feature of operationalisation. This should include promoting dialogue to enable within, and cross, sector partnership thus using regulation as an engine for improvement.

7. Engage with supporting institutions such as academic and research institutions to support them develop and expand their capacity to train physicians and provide opportunities for continuous professional development.

8. Foster dialogue and partnership across stakeholders including academic and research institutions, national training bodies, the MoHP, the EMS, and patient representative organisations to engender an inclusive and supportive environment geared towards performance improvement which reinforces a collective commitment to excellence and promote shared learning, knowledge exchange, professional identity development and collaborative problem solving in professional development and growth.

9. Promote good practice, and encourage a culture of reflection, and improvement to enshrine developmental and supportive principles, through a system-wide approach to performance improvement.

10. Support and encourage physicians for facilitate self-review, adopt new approaches, refine their techniques, and enhance their performance and provide clear guidance for their role, and responsibilities in license renewal.

11. Establish and disseminate a robust evaluation strategy to assess the effectiveness, efficiency, and impact of the medical relicensing process in achieving its intended objectives and outcomes and to serve as a systematic and evidence-based approach to quantify, refine, and enhance the relicensing process.

It's important to note that, while the generated recommendations are wholly underpinned by the evidence generated and critiqued in this thesis of study, the have been articulated in a tailored fashion to resonate with audiences such as policymakers, practitioners, and researchers. In the recommendations enumerated above, and throughout the thesis, proposals and suggestions were put forward, particularly in terms of areas of inquiry that could build upon this thesis study and contribute to advancing knowledge in the field, which incorporate an expanded scope to progress the depth and richness of the discussion regarding the Egyptian medical relicensing endeavour.

12.3 Final remarks

The introduction of a health workforce policy intervention such as medical relicensing is ushering in a new era for health system governance in Egypt which can be of great value to enhance the safety and quality of medical practice , and can be a step-change in terms of boosting opportunities for active learning, continuous medical and professional development, and upskilling physicians in Egypt, if it is designed and implemented in a fit-for-purpose and fit-for-context. This thesis of study offers a first-of-its-kind new model for medical relicensing in Egypt which leverages global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, and health systems that is crystalised in context-specific and context-sensitive to the Egyptian setting.

The new model for medical relicensing in Egypt developed through this thesis of study builds on the developed and tested conceptual framework derived from the context-mechanism-outcome configuration specifically produced for this research and provides structurally cohesive explanations of the practical realities and challenges involved in complex interventions such as relicensing. It draws on the exhaustive realist perspective of complexity and the number of different factors considered that underpin it including volition, context, time, and rivalry, and builds on the revised program theory which theorises medical relicensing akin to crossing a chasm within which a variety of contexts are embedded, each having the potential to trigger various mechanisms which interact to produce diverse outcomes.

The new model for medical relicensing in Egypt demonstrates the relationship between the moving parts, features, and actors involved in medical relicensing in Egypt which sheds a light on the direction of influence that link structures, process, and outcomes, all of which, to the best of my knowledge, have never been accomplished before for the context of Egypt. Alongside the new model, an initial menu of performance measurements for primary care was also developed to accentuate the frameworks' utility, and readiness to use on a speciality-focused level. The menu of performance measurements for primary care offers practical, direct, and indirect, measures of assessment that can be either feasibly realizable and/or embedded within the processes of the Egyptian health information boundaries currently in place. Primary care and primary care physicians are the points of focus in this PhD thesis of study, to offer a well-defined medical speciality specific context, insights, and perspectives. The selected measurements can capture and/or realistically determine complimentary aspects of performance rending them, all together, an as-inclusive-as-possible depiction of performance which can be adapted and adopted to other specialities and therefore provide a prototypical exemplar for replicable approaches for individual-level performance assessment that can be used for other specialities across the Egyptian health system. Such approaches and activities have the potential to nurture a collaborative learning culture where physicians can benefit from the collective wisdom of their community of practice, find innovative approaches to improve their performance, as well as promote continuous learning and improvement, all the while they practice in a supportive environment which reinforces a collective commitment to excellence.

The new model for medical relicensing in Egypt can be used by policy makers to support the progress of physician performance improvement efforts at the country level in the following ways:

1) As a framework for action that can be used to review, monitor and evaluate national regulatory interventions intended to progress physicians' performance,

2) As an evidence informed foundation for a standardized approach for medical relicensing in the country which leverages global experience in medical regulation and scholarship from the fields of learning & education, psychology, performance, and health systems, that is crystalised in a locally relevant manner to the Egyptian setting,

3) To align as a national framework with global linguistic convention which can be used to track and monitor progress towards universal health coverage and health related sustainable development goals.

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In this chapter I recapitulate the key policy relevant health systems knowledge generated by this PhD of study and outline how it can be used to support the Egyptian medical relicensing endeavour. This chapter concludes with context-specific and context-sensitive recommendations for the way forward for the Egyptian medical relicensing undertaking, a proposal of actionable recommendations for progress, and a summary of final remarks.

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APPENDIX

Appendix 1: Scoping review search strategy

- MEDLINE search terms and number of hits:

1	Recertification.mp.	844
2	Medical relicensing.mp.	0
3	re-licensing.mp.	33
4	relicensing.mp.	60
5	Maintenance of competence.mp.	88
6	Revalidation.mp.	1,029
7	Continuing professional development.mp.	1,752
8	Maintenance of licensure.mp.	16
9	relicens*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	201
10	revalid*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1,559
11	medical relicens*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	2
12	recertificat*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	848
13	(maint* adj2 licens*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	79
14	(maint* adj2 certificat*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	785

15	(maint* adj2 competence*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	509
16	physician*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	515,776
17	doctor*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	114,593
18	physicians/ or general practitioners/ or physicians, family/ or physicians, primary care/	105,591
19	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	5,478
20	16 or 17 or 18	59,3315
21	19 and 20	**1,257**

- EMBASE search terms and number of hits:

1	Recertification.mp.	1,462
2	Medical relicensing.mp.	0
3	re-licensing.mp.	45
4	relicensing.mp.	75
5	Maintenance of competence.mp.	107
6	Revalidation.mp.	1,509
7	Continuing professional development.mp.	2,429
8	Maintenance of licensure.mp.	23
9	relicens*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	243
10	revalid*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	2,254

11	medical relicens*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	2
12	recertificat*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	1,467
13	(maint* adj2 licens*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	94
14	(maint* adj2 certificat*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	999
15	(maint* adj2 competence*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	676
16	physician*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	662,281
17	doctor*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	270,509
18	physicians/ or general practitioners/ or physicians, family/ or physicians, primary care/	244,669
19	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	7,692
20	16 or 17 or 18	879,751
21	19 and 20	**2,105**

- Global Health search terms and number of hits:

1	Recertification.mp.	20
2	Medical relicensing.mp.	0
3	re-licensing.mp.	2
4	relicensing.mp.	5
5	Maintenance of competence.mp.	5

6	Revalidation.mp.	51
7	Continuing professional development.mp.	143
8	Maintenance of certification.mp.	7
9	Maintenance of licensure.mp.	1
10	relicens*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	8
11	revalid*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	137
12	medical relicens*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	0
13	recertificat*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	22
14	(maint* adj2 licens*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	8
15	(maint* adj2 certificat*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	19
16	(maint* adj2 competence*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	29
17	physician*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	38,787
18	doctor*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	27,257
19	physicians/ or general practitioners/ or physicians, family/ or physicians, primary care/	18,680
20	17 or 18 or 19	51,102
21	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16	362
22	20 and 21	**63**

♦ ERIC search terms and number of hits:

1	relicens* OR revalid* OR medical relicens* OR recertificat*	332
2	doctor* OR physician*	27,241
3	1 AND 2	**32**

- Scopus search terms and number of hits:

1	(relicens*)OR (revalid*) OR (medical AND relicens*) OR (recertificat*)	5,141
2	(doctor*) OR (physician*)	841,030
3	1 AND 2	**856**

- Cochrane library search terms and number of hits:

1	relicens* or revalid* or medical relicens* or recertificat*	102
2	doctor* OR physician*	51,417
3	1 AND 2	**21**

- Google scholar search terms and number of hits:

("relicens* OR medical relicens* OR recertificat*") AND ("doctor* OR physician*") = **1,750**

Appendix 2: Systematic review search strategy

- MEDLINE search terms and number of hits:

1	(perform* adj2 assess*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	55582
2	performance metrics.mp.	1994
3	performance measures.mp.	6783
4	(perform* adj2 measur*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	60576
5	physician*.mp.	549565
6	doctor*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] or Family Practice/ or Physicians/	252060
7	general practitioners.mp. or Family Practice/ or General Practitioners/	92672
	(1 OR 2 OR 3 OR 4) AND (5 OR 6 OR 7)	**4279**

- Embase search terms and number of hits:

1	(perform* adj2 assess*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	84194
2	performance metrics.mp.	2736
3	performance measures.mp.	8839
4	(perform* adj2 measur*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	86548
5	physician*.mp.	719164
6	doctor*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word] or Family Practice/ or Physicians/	511064

7	general practitioners.mp. or Family Practice/ or General Practitioners/	177408
	(1 OR 2 OR 3 OR 4) AND (5 OR 6 OR 7)	**7956**

- Global Health search terms and number of hits:

1	perform* assessm*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	35219
2	(perform* adj2 assess*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	8009
3	performance metrics.mp.	108
4	performance measures.mp.	594
5	(perform* adj2 measur*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	5314
6	physician*.mp.	43082
7	doctor*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes] or Family Practice/ or Physicians/	31122
8	general practitioners.mp. or Family Practice/ or General Practitioners/	6553
	(1 OR 2 OR 3 OR 4) AND (5 OR 6 OR 7)	**363**

- ERIC search terms and number of hits:

1	performance evaluation OR performance appraisal OR performance measurement	10399
2	doctor* OR physician*	28199
	1 AND 2	**156**

- Cochrane library search terms and number of hits:

1	Performance Appraisal (MeSH)	757
2	doctor* OR physician*	61525
	1 AND 2	**334**

- WHOLIS search terms and number of hits:

performance AND doctor = **107**

Appendix 3: Semi-structured interviews participant information sheet and consent form

Imperial College London

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Study title: Understanding the prospective impact of medical relicensing of primary care physicians in Egypt on their performance: a qualitative study (semi-structured interviews)

Participant Information Sheet

Dear participant,

You are being invited to take part in a research study that aims to generate new information translational to policy, education and practice on the prospective impact of relicensing primary care physicians in Egypt on their performance. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask the researcher (contact details below) if there is anything you do not understand or of you would like further information.

As you're well aware, the Egyptian Authority for Compulsory Training of Doctors (EACTD) was formally inaugurated in 2017 with the mandate to address most of the challenges of continuous medical education in Egypt through (ultimately) awarding renewed licences to practice medicine (every 5 years), effective 2022. This study is trying to identify key knowledge in respect to the impact of how relicensing is expected to affect the performance of physicians in Egypt, focusing on primary care physicians as a cohort of interest to shed some light on the likely intended and unintended outcomes of this policy intervention and identify possible recommendations that can be made to navigate through the enablers and barriers. This study intends to generate this knowledge through semi-structured interviews with key field experts such as yourself.

You have been invited for participation because of your valuable input into the field of health workforce development over the past decades and your extensive experience and research into this important aspect of health system strengthening. If you agree to participate, the researcher will ask you to sign a consent form and arrange for an interview either in person or over the phone/skype. During the interview the researcher will ask questions related to your experience which will be recorded using an audio tape recorder. The purpose of the recording is to allow the researcher to capture all the information discussed during the interview, which is important for her to analyse later. The interview will take about 30 minutes. You are kindly required to answer the questions based on your personal experience during the interview. However, you can refuse to answer any questions which you feel uncomfortable with and you can stop the interview at any time.

The recorded conversation will be transcribed by the researcher who will be the only person to have access to the audiotape. Once the transcript has been completed and checked by the interviewer for accuracy, the audiotape will be erased. All information will be coded and anonymised. Only the researcher will have access to the data. The data collected will be used only for the purpose of this research; if data were to be used for future studies, further Research Ethics Committee approval will be sought. The collected data will be stored in electronic format and will be stored in highly secured computers at Imperial College London, Department of Primary Care and Public Health. Any printed hard copies of the transcripts that might be used for analyses will be stored in locked drawers at Imperial College London, Department of Primary Care and Public Health and only the Principal Investigators will have access to these materials. No identifying information will be held in relation to the participants, which can be linked to the data collected, and any published data will not identify individuals, their institution, or organisations. Dates of birth or home postcodes of participants will not be recorded. The Principal Investigator will preserve the confidentiality of participants taking part in the study.

Imperial College London is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Imperial College London will keep identifiable information about you [for 10 years after the study has finished/ until 2030].

As a university we use personally-identifiable information to conduct research to improve health, care and services. As a publicly-funded organisation, we have to ensure that it is in the public interest when we use personally-identifiable information from people who have agreed to take part in research

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information from Dr Sondus Hassounah (s.hassounah@imperial.ac.uk).

The Department of Primary care and Public Health will collect information from you for this research study in accordance with our instructions. We will keep your name, and contact details confidential and will not pass this information to Imperial College London. The Department of Primary care and Public Health will use this information as needed, to contact you about the research study, and make sure that relevant information about the study is and to oversee the quality of the study. Certain individuals from Imperial College London and regulatory organisations may look at your research records to check the accuracy of the research study. Imperial College London will only receive information without any identifying information. The people who analyse the information will not be able to identify you and will not be able to find out your name, or contact details.

The Department of Primary care and Public Health will keep identifiable information about you from this study [for 10 years after the study has finished/ until 2030].

A scientific paper will be prepared for publication describing the findings of the study. Each participant will be forwarded a copy of the published paper and a copy of the project report if they indicate they wish to receive these documents. This study has been reviewed and approved by the Head of Department and Joint Research and Compliance Office.

The research is organised by researchers in the Department of Primary Care and Public Health in the Faculty of Medicine at Imperial College London. Imperial College London is a public research university located in London, United Kingdom, with a world-class reputation for science, engineering, medicine, and business. The research is funded by the Department of Primary Care and Public Health in the Faculty of Medicine at Imperial College London.

Further information and contact details

For more information and to discuss the information sheet, please contact the researcher:
Name: Sondus Hassounah (https://www.imperial.ac.uk/people/s.hassounah)
Email: s.hassounah@imperial.ac.uk
Phone: +44 (0)77 160 43324

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Study title: Understanding the prospective impact of medical relicensing of primary care physicians in Egypt on their performance: a qualitative study (semi-structured interviews)

Consent Form

Name of Researcher: Sondus Hassounah

Please tick to indicate you consent to the following:

I confirm that I have read and understand the subject information sheet dated 26/26/2018 version x.0 for the above study and have had the opportunity to ask questions which have been answered fully	Yes ☐	No ☐
I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason, without my legal rights being affected.	Yes ☐	No ☐
I understand that taking part in this study is voluntary (my choice)	Yes ☐	No ☐
I know who to contact if I have any questions about the study in general.	Yes ☐	No ☐

Declaration by participant:
I hereby consent to take part in this study.

Participant's name:

Signature: Date:

Declaration by researcher:
I believe that the participant understands the study and has given informed consent to participate.

Researcher's name:

Signature: Date:

Consent form date of issue: [26.06.2018]
Consent form version number: [v2.0]
Sondus Hassounah – Imperial College London

Appendix 4: Modified Delphi participant information sheet and consent form

Imperial College London

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Study title: Understanding the prospective impact of medical relicensing of primary care physicians in Egypt on their performance: a modified Delphi study

Participant Information Sheet

Dear participant,

You are being invited to take part in a research study that aims to generate new information translational to policy, education and practice on the prospective impact of relicensing primary care physicians in Egypt on their performance. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask the researcher (contact details below) if there is anything you do not understand or of you would like further information.

As you're well aware, the Compulsory Egyptian Medical Training Authority (CEMTA) was formally inaugurated in 2017 with the mandate to address most of the challenges of continuous medical education in Egypt through (ultimately) awarding renewed licences to practice medicine (every 5 years), effective 2022. This study is trying to consolidate key knowledge in respect to the impact of how relicensing is expected to affect the performance of physicians in Egypt, focusing on primary care physicians as a cohort of interest to shed some light on the likely intended and unintended outcomes of this policy intervention and identify possible recommendations that can be made to navigate through the enablers and barriers.

At an earlier stage you have kindly contributed with the wealth of your experience to inform the direction of travel of this research through a short interview; your valuable contribution has allowed the researcher to decant this knowledge into a conceptual framework showing how relicensing is expected to affect the performance of primary care physicians in Egypt which this modified Delphi study aims to garner your consensus on. This modified Delphi method involves asking a set of questions, in this case electronically, on the conceptual framework developed by the researcher. Your collective responses will then be summarized and followed up by asking for your views on the summarised answers on two separate occasions. This is done by answering a questionnaire online at each stage.

You have been invited for participation because of your valuable input into the field of health workforce development over the past decades and your extensive experience and research into this important aspect of health system strengthening. If you agree to participate, the researcher will ask you to sign a consent form and arrange to share with you the questionnaire(s). In total, participants will be asked to complete an online questionnaire on three separate occasions. The questionnaire will be circulated by email and completion should take no more than 10 to 15 minutes and can be done in one "sitting" or across several, to fit in with your busy schedule. You will be required to have access to electronic mail (email) and the Internet to be able to participate.

The questionnaire is administered through SurveyMonkey© software. There are a few questions regarding your background. The data from these questions will be summarised prior to reporting, so individuals will not be identifiable. Other questions ask for your views on key priority areas for health workforce development under different domains. Once you have completed the questionnaire, please click on the 'done' button which will submit the questionnaire for inclusion in the study. Participation is entirely voluntary and there are no consequences if you withdraw from the study prior or after to clicking the 'done' button.

Only the researcher will have access to the data. The data collected will be used only for the purpose of this research; if data were to be used for future studies, further Research Ethics Committee approval will be sought. The collected data will be stored in electronic format and will be stored in highly secured computers at Imperial College London, Department of Primary Care and Public Health. Any printed hard copies of the questionnaires that might be used for analyses will be stored in locked drawers at Imperial College London, Department of Primary Care and Public Health and only the Principal Investigators will have access to these materials. No identifying information will be held in relation to the participants which can be linked to the data collected, and any published data will not identify individuals, their institution, or organisations. Dates of birth or home postcodes of participants will not be recorded. The Principal Investigator will preserve the confidentiality of participants taking part in the study.

Imperial College London is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Imperial College London will keep identifiable information about you [for 10 years after the study has finished/ until 2030].

As a university we use personally-identifiable information to conduct research to improve health, care and services. As a publicly-funded organisation, we have to ensure that it is in the public interest when we use personally-identifiable information from people who have agreed to take part in research

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information from Dr Sondus Hassounah (s.hassounah@imperial.ac.uk).

The Department of Primary care and Public Health will collect information from you for this research study in accordance with our instructions. We will keep your name, and contact details confidential and will not pass this information to Imperial College London. The Department of Primary care and Public Health will use this information as needed, to contact you about the research study, and make sure that relevant information about the study is and to oversee the quality of the study. Certain individuals from Imperial College London and regulatory organisations may look at your research records to check the accuracy of the research study. Imperial College London will only receive information without any identifying information. The people who analyse the information will not be able to identify you and will not be able to find out your name, or contact details.

The Department of Primary care and Public Health will keep identifiable information about you from this study [for 10 years after the study has finished/ until 2030].

A scientific paper will be prepared for publication describing the findings of the study. Each participant will be forwarded a copy of the published paper and a copy of the project report if they indicate they wish to receive these documents. This study has been reviewed and approved by the Head of Department and Joint Research and Compliance Office.

The research is organised by researchers in the Department of Primary Care and Public Health in the Faculty of Medicine at Imperial College London. Imperial College London is a public research university located in London, United Kingdom, with a world-class reputation for science, engineering, medicine, and business. The research is funded by the Department of Primary Care and Public Health in the Faculty of Medicine at Imperial College London.

Further information and contact details

For more information and to discuss the information sheet, please contact the researcher:
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Study title: Understanding the prospective impact of medical relicensing of primary care physicians in Egypt on their performance: a modified Delphi study

Consent Form

Name of Researcher: Sondus Hassounah

Please tick to indicate you consent to the following:

I confirm that I have read and understand the subject information sheet dated 25/06/2018 version x.0 for the above study and have had the opportunity to ask questions which have been answered fully	Yes ☐	No ☐
I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason, without my legal rights being affected.	Yes ☐	No ☐
I understand that taking part in this study is voluntary (my choice)	Yes ☐	No ☐
I know who to contact if I have any questions about the study in general.	Yes ☐	No ☐

Declaration by participant:
I hereby consent to take part in this study.

Participant's name:

Date:

Declaration by researcher:
I believe that the participant understands the study and has given informed consent to participate.

Researcher's name:

Signature: Date:

Consent form date of issue: [25.06.2018]
Consent form version number: [v2.0]
Sondus Hassounah – Imperial College London

Appendix 5: Modified Delphi questionnaire

<table>
<tr><td colspan="7">Domain 1: Relicensing as a tool to improve healthcare quality and safety standards

The questions in this section are about your perception of relicensing in general, and what you consider would be its impact, both positive and negative.</td></tr>
<tr><td rowspan="3">Question 1.1</td><td colspan="6">Q1. All medical professionals should undergo a form of periodic review of their competence and up to date professional knowledge and skills</td></tr>
<tr><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td colspan="2">Strongly disagree</td></tr>
<tr><td colspan="6">Q2. Comment/Reason/Explanation:</td></tr>
<tr><td rowspan="3">Question 1.2</td><td colspan="6">Q3. All medical professionals should regularly take part in activities that maintain and develop their competence and performance</td></tr>
<tr><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td colspan="2">Strongly disagree</td></tr>
<tr><td colspan="6">Q4. Comment/Reason/Explanation:</td></tr>
<tr><td rowspan="10">Question 1.3</td><td colspan="6">Q.5 The medical relicensing process, should include elements that address:</td></tr>
<tr><td>a. Knowledge</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>b. Skills</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>c. Performance</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>d. Safety</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>e. Quality</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>f. Communication</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>g. Partnership and teamwork</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td>h. Trust (with colleagues and patients)</td><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td>Strongly disagree</td></tr>
<tr><td></td><td colspan="6">Q6. Comment/Reason/Explanation:</td></tr>
<tr><td rowspan="3">Question 1.4</td><td colspan="6">Q7. Medical relicensure should be an assessment of learning (ie: summative assessment, such as a graded assignment or exam)</td></tr>
<tr><td>Strongly agree</td><td>Agree</td><td>Neither agree nor disagree</td><td>Disagree</td><td colspan="2">Strongly disagree</td></tr>
<tr><td colspan="6">Q8. Comment/Reason/Explanation:</td></tr>
</table>

Question 1.5	Q9. Medical relicensure should be an assessment ***for*** learning (ie: formative assessment, such as a activities to facilitate reflection and professional development)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q10. Comment/Reason/Explanation:				
Question 1. 6	Q11. Medical relicensure should include elements of formative and summative assessments				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q12. Comment/Reason/Explanation:				

Domain 2: Key considerations for medical relicensing in Egypt

The questions in this section are about your perception of how medical relicensing will take shape in Egypt, and what you consider can support, or hinder, its successful implementation.

Question 2.1	Q13. I believe that relicensing in Egypt has clearly defined objectives				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q14. Comment/Reason/Explanation:				
Question 2.2	Q15. I can confidently describe the components and processes of relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q16. Comment/Reason/Explanation:				
Question 2.3	Q17. As i understand it, for a medical doctor to be relicensed in Egypt s/he will have to complete 250 hours of 'practice ' over 5 years (which primarily include continuous professional development and training*), the evidence of which should be submitted in the form of an online portfolio. *Types of CPD as outlined by CEMTA are: Live educational events, e-learning material, blended learning, scientific activities, quality circles, and supervision				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q18. Comment/Reason/Explanation:				
	Q19. If you have chosen 'Strongly agree' or 'Agree' please move to the next question (question 2.4) in this section. However, if you have chosen 'Neither agree nor disagree', 'Disagree', or 'Strongly disagree' please identify in this section some free text of what your understanding is for the requirement of relicensing.				

Question 2.4	Q20. I believe that participating in 250 hours of practice (as outlined in the question 2.3) suffices to verify that doctors are up to date and fit to practice .				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q21. Comment/Reason/Explanation:				
Question 2.5	Q22. There has been adequate preparedness and preparation to enable participating institutions and individuals to effectively implement and undertake relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q23. Comment/Reason/Explanation:				
Question 2.6	Q24. There has been adequate planning and preparation to monitor the roll out and impact of relicensing once it's launched				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q25. Comment/Reason/Explanation:				
Question 2.7	Q26. There has been adequate planning and preparation to evaluate of the impact of relicensing once it's rolled out.				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q27. Comment/Reason/Explanation:				
Question 2.8	Q28. The aim of the introduction of medical relicensure in Egypt, as perceived by you, is to improve patient safety and quality of medical care				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q29. Comment/Reason/Explanation:				
Question 2.9	Q30. The aim of the introduction of medical relicensure in Egypt, as perceived by you, is to create more regulatory and administrative challenges				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q31. Comment/Reason/Explanation:				
Question 2.10	Q32. Medical relicensure in Egypt, in its current structure and organisation, has the potential to improve patient safety and quality of medical care				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q33. Comment/Reason/Explanation:				
Question 2.11	If designed and implemented in a context sensitive and context specific manner medical relicensing in Egypt can: Q34 a. Detect emerging sub-standard, dangerous, or criminal practice and take effective action at an early stage before patients come to harm				

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q35. Comment/Reason/Explanation:				
	Q36. b. Reassure patients by creating better certainty about the quality of care their healthcare provider has be signed-off to deliver.				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q37. Comment/Reason/Explanation:				
	Q38. c. Encourage professionals to admit even the possibility that a doctor might be putting patients seriously at risk				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q39. Comment/Reason/Explanation:				
	Q40. d. Creates an environment for a uniform and systematic arrangement to verify that doctors are up to date, and fit to practice .				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q41. Comment/Reason/Explanation:				

Domain 3: Key priorities to support effective implementation of relicensing in Egypt

The questions in this section are about what you consider to be the priorities to support effective implementation of relicensing in Egypt, and your recommendations for an appropriate, and acceptable, approach.

This section is divided into two parts: Part A: Question related to the *content* of medical relicensing in Egypt, and section B: Question related to the *context* within which medical relicensing in Egypt operates

Section A: The content of medical relicensing in Egypt

Question 3.1	Q42. Activities that address the following elements **must** be included as part of medical relicensing in Egypt:					
	a. Knowledge	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	b. Skills	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	c. Performance	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

d. Safety	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
e. Quality	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
f. Communication	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
g. Partnership and teamwork	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
h. Trust (with colleagues and patients)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

Q43. Comment/Reason/Explanation:

**Please use this space to suggest any other activities you believe are essential to be included as part of medical relicensing in Egypt and add any comments or reasoning you think is relevant*

Questions 3.2-3.8 in this section will ask you about the elements listed in question 3.1 in further detail.

Question 3.2

In terms of knowledge assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box to make any comments or reasoning you think is relevant

a. Written exam (Q44)

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

Q45. Comment/Reason/Explanation:

b. Oral exam (Q46)

Strongly agree	Agree	Neither agree nor disagree	Disagr ee	Strongly disagree

Q47. Comment/Reason/Explanation:

c. Continuing professional development activities (Q48)

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

(Q49) Comment/Reason/Explanation:

d. Quality improvement activities (Q50)

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis

(Q51) Comment/Reason/Explanation:

e. Additional activity: Please specify (Q52)

	(Please use this space to suggest any other activities that you believe are essential to be included as part of knowledge assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)
Question 3.3	In terms of skills assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant a. An Appraisal (defined as a facilitated self-review supported by information gathered from the full scope of a doctor's work) (Q53) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q54. Comment/Reason/Explanation: b. Continuing professional development activities (Q55) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q56. Comment/Reason/Explanation: c. Quality improvement activities (Q57) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q58. Comment/Reason/Explanation: d. Personal development plan development and review (Q59) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis (Q60)Comment/Reason/Explanation: e. Personal reflection on practice (Q61) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis (Q62) Comment/Reason/Explanation: f. Additional activity: Please specify (Q63) (Please use this space to suggest any other activities you believe are essential to be included as part of skills assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)
Question 3.4	In terms of performance assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant a. Key performance indicators (Q64) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q65. Comment/Reason/Explanation:

	b. Personal development plan review (Q66)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q67. Comment/Reason/Explanation:				
	c. Feedback from colleagues (Q68)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q69. Comment/Reason/Explanation:				
	d. Feedback from patients (Q70)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q71. Comment/Reason/Explanation:				
	e. Review of complaints and complements (Q72)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q73. Comment/Reason/Explanation:				
	f. Additional activity: Please specify (Q74) (Please use this space to suggest any other activities you believe are essential to be included as part of performance assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)				
Question 3.5	In terms of safety assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant a. Continuing professional development activities (Q75)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q76. Comment/Reason/Explanation:				
	b. Quality improvement activities (Q77)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q78. Comment/Reason/Explanation:				
	c. Significant events (any unintended or unexpected event, which could or did lead to harm of one or more patients. This includes incidents which did not cause harm but could have done (ie: near miss), or where the event should have been prevented. This can also be any serious incidents experienced that led to a change in the doctors' practice or demonstrate insight and learning. (Q79)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q80. Comment/Reason/Explanation:				

	d. Feedback from colleagues (Q81)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q82. Comment/Reason/Explanation:				
	e. Feedback from patients (Q83)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q84. Comment/Reason/Explanation:				
	f. Review of complaints and complements (Q85)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q86. Comment/Reason/Explanation:				
	g. Additional activity: Please specify (Q87) (Please use this space to suggest any other activities you believe are essential to be included as part of safety assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)				
Question 3.6	In terms of quality assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant. a. Continuing professional development activities (Q88)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q89. Comment/Reason/Explanation:				
	b. Quality improvement activities (Q90)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q91. Comment/Reason/Explanation:				
	c. Feedback from colleagues (Q92)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	(Q93) Comment/Reason/Explanation:				
	d. Feedback from patients (Q94)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q95. Comment/Reason/Explanation:				
	e. Review of complaints and complements (Q96)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly dis
	Q97. Comment/Reason/Explanation:				
	f. Additional activity: Please specify (Q98) (Please use this space to suggest any other activities you believe are essential to be included as part of quality assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)				

Question 3.7	In terms of communication assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant. a. Feedback from colleagues (Q99) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q100. Comment/Reason/Explanation: b. Feedback from patients (Q101) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis (Q102)Comment/Reason/Explanation: c. Review of complaints and complements (Q103) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q104. Comment/Reason/Explanation: d. Additional activity: Please specify (Q105) (Please use this space to suggest any other activities you believe are essential to be included as part of communication assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)
Question 3.8	In terms of partnership and teamwork assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant. a. Feedback from colleagues (Q106) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q107. Comment/Reason/Explanation: b. Review of complaints and complements (Q108) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis (Q109) Comment/Reason/Explanation: c. Additional activity: Please specify (Q110) (Please use this space to suggest any other activities you believe are essential to be included as part of partnership and teamwork assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)

Question 3.9	In terms of trust assessment, different options for activities are listed below. Please select the response that best describes your opinion for each activity. If you would like to add or suggest one or more activity to assess knowledge that is not listed, please add that in the 'additional activity' box and feel free to make any comments or reasoning you think is relevant. a. Feedback from colleagues (Q111) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q112. Comment/Reason/Explanation: b. Feedback from patients (Q113) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q114. Comment/Reason/Explanation: c. Review of complaints and complements (Q115) Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly dis Q116. Comment/Reason/Explanation: d. Additional activity: Please specify (Q117) (Please use this space to suggest any other activities you believe are essential to be included as part of trust assessment for medical relicensing in Egypt and add any comments or reasoning you find relevant)

Section B: The context* within which medical relicensing in Egypt operates. *'Context' here is considered as the background circumstance that can encourage/enable, or equally discourage/hinder medical professionals in Egypt undertaking relicensing. They are the factors that can influence how and when relicensing is delivered.					
Question 3.10	Q118. The Egyptian health system information infrastructure, in its current form, is developed to the extent that is capable of data collection provision for doctors' performance measurement				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q119. Comment/Reason/Explanation				
Question 3.11	Q120. National medical information management systems in Egypt support collecting data on individual doctors' performance				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q121. Comment/Reason/Explanation				
Question 3.12	Q122. The attitudes that currently exist within the Egyptian medical system is one of performance improvement				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q123. Comment/Reason/Explanation				

Question 3.13	Q124. The culture that currently exist within the Egyptian medical system is a reprimanding one (ie: one of that is designed to catch doctors out to discipline them) rather than one to identify poor performance early to improve and develop				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q125. Comment/Reason/Explanation				
Question 3.14	Q126. There is public and patient pressure to improve doctors' performance in Egypt.				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q127. Comment/Reason/Explanation				
Question 3.15	Q128. Medical and healthcare institutions are adequately prepared to support the roll out of medical relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q129. Comment/Reason/Explanation				
Question 3.16	Q130. Medical and healthcare professionals are adequately prepared to undertake medical relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q131. Comment/Reason/Explanation				
Question 3.17	Q132. There is clear communication and engagement on a national level to inform and engage medical and healthcare institutional stakeholders regarding the next steps to undertake medical relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q133. Comment/Reason/Explanation				
Question 3.18	Q134. There is clear communication and engagement on a national level to inform and engage doctors and healthcare professional stakeholders regarding the next steps to undertake medical relicensing in Egypt				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Q135. Comment/Reason/Explanation				

Appendix 6: Semi-structured interview guide

1. Introduction

Welcome participant and thank him/her for participating.

Remind the participant:

1. Of the objectives of the semi-structured interview and the overall study.
2. That they have provided written consent prior to participating and that they consented to take part in the study (Note: A paper copy of the consent form will be available if they have not signed it already which must be signed prior to commencement)
3. That no personal details from the participants will be collected, and that anonymity and confidentiality of participants will be strictly protected throughout the stages of the study.
4. That they are free to decline or terminate their participation in the study following their invitation and that participation is voluntary and they can withdraw at any time without giving any reason for their withdrawal. Also remind them that the withdrawal criteria is clearly stated in the participant information sheet and the consent forms which they have already received prior to participation.
5. That the findings from the study will be disseminated to study participants following the conclusion of the study, and that the findings from the study will also be submitted for publication in relevant scientific journal -- Copies of any published articles will be shared with the study participants.

Explain that the length of the interview will be approximately 30 minutes and that it will be recorded.

2. **Background information**

Invite interview to briefly tell me about him/herself: general information about background…mostly about experiences and perspectives surrounding physicians performance, primary care, and relicensing.

3. Knowledge regarding the medical regulation landscape in Egypt

a. Can you tell me about your experience with medical regulation (especially pertaining to health workforce) in Egypt?

Probe: Do they have any knowledge regarding any medical regulation related to physician's performance + any specific examples of regulation of primary care physicians in Egypt, if appropriate?

b. In your opinion what do you consider are examples of policy interventions that worked well, and others that didn't work well, in regards to regulating physician's performance in Egypt? And why?

c. What do you know about the new Egyptian Authority for Compulsory Training of Doctors (EACTD) which was inaugurated last year?

Probe: Do they have any knowledge regarding EACTD's mandate and its function (+ opinion/view)?

4. Understanding regarding current preparation for relicensing in Egypt (and the shape relicensing is expected to take)

a. What do you know about the new policy intervention (ie: relicensing of physicians every 5 years effective 2022)? Where did you draw this knowledge from (source of information)?

Probe: What is their opinion/ view regarding the new policy intervention, if appropriate?

b. What do you know about the preparation for relicensing in Egypt? Where did you draw this knowledge from (source of information)?

Probe: What is their opinion/ view regarding the preparation for relicensing, if appropriate?

5. **Key considerations that will form the basis of a preliminary conceptual framework showing how relicensing is expected to affect the performance of primary care physicians in Egypt**

a. What would you advise to be the priorities to consider moving forward in regards to:
   i. The new policy intervention (ie: relicensing of physicians every 5 years effective 2022)
   ii. The preparation for the implementation of relicensing expected to take place in 2022
   iii. The performance of primary care physicians in Egypt and how to regulate it

6. **Final remarks**
   a. Would you like to share any concluding remarks?

Conclude the interview and thank participant for taking part and for their time.

Appendix 7: Segment of abstraction process: coding labels and cluster construction

Cluster 1: What will relicensing look like	
Coding label	*Role in relicensing
	*Roles and responsibility: CEMTA
	*Professional role of CEMTA
	*Future aspiration: CEMTA
	*Relicensing details (speciality specific)
	*Relicensing details (timeline)
	*Relicensing preparedness
	*Relicensing role out
Cluster 2: Current climate relicensing is operating in	
Coding label	*Evolution of family medicine
	*Health workforce migration
	*Medical education and regulation in Egypt
	*Medical regulation in Egypt
	*Medical regulation landscape
	*Medical regulation landscape (Arab World)
	*Need for change (Med body)
	*Need for change (Med data mngmt)
Cluster 3: Enablers to implementation	
Coding label	*Role in relicensing
	*Roles and responsibility: CEMTA
	*Need for change (CPD/CME)
	*Need for change (Evidence of practice)
	*Health workforce migration
	*Labour markets
	*Progress in national medical data management
Cluster 4: Barriers to implementation	
Coding label	*Challenges in medical regulation in Egypt
	*Adapting to context
	*Challenges: NTI
	*Barriers for effective implementation
	*Communication (lack of)
	*Communication (how relicensing has been communicated thus far)
	*Generational implications
	*Health workforce migration
	*Implications of poorly planned implementation
	*Labour markets
	*Perception of CEMTA/relicensing (More detail: Top down approach)
	*Perception of CEMTA/relicensing (More detail: Lack of preparation or inclusion in decision making)
	*Progress in national medical data management
	*Preparedness for roll-out
	*Preparedness of physicians
Cluster 5: Perception of relicensing	
	*Role in relicensing
	*Roles and responsibility: CEMTA

Coding label	*Communication (lack of)
	*Communication (how relicensing has been communicated thus far)
	*Perception of CEMTA/relicensing
	*Perception of CEMTA/relicensing (More detail: Top down approach)
	*Perception of CEMTA/relicensing (More detail: Lack of preparation or inclusion in decision making)
	*Perception of relicensing
Cluster 6: Perceived consequences to current direction of travel	
Coding label	*Denial
	*Working the system
	*Not taking process seriously
	*Nothing changing
Cluster 7: Role of supporting institutions	
Coding label	*Challenges: NTI
	*Roles and responsibility: CEMTA
	*Preparedness for roll-out
	*Preparedness of physicians
	*Role of supporting institution (Academia)
	*Remit of NTI
Cluster 8: Idea/suggestions of how relicensing can take form in Egypt	
Coding label	*Learning from others + adapting to context
	*Evaluation of physicians knowledge and skills
	*Preparedness for roll-out
	*Preparedness of physicians
	*Relicensing preparedness
	*Relicensing role out
	*Suggestions for roll-out of relicensing
	*Suggestions for roll-out of relicensing (Comms)
	*Suggestions for roll-out of relicensing (incentives)
	*Urgency for detail about relicensing to better prepare