Saudi Arabian women in medical education: A mixed method exploration of emergent digital leadership

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Abstract

Background: Saudi Arabian women's leadership in medical education is evolving. As in Western contexts, the number of women in formal leadership positions in Saudi medical education is increasing. However, given the unique cultural context, Saudi women health professionals may have less influence in their organizations than their counterparts in the West. Novel digital approaches may offer women a form of leadership by which their influence might be increased. Using the Mededlam.com "LAM" digital initiative, an online digital community dedicated to helping medical professionals in their leadership, teaching, and research roles by disseminating digital content that tackle different topics in medical education, this study explores the emergence of women's leadership through their participation in an online professional community.

Objectives: 1) Establish a common understanding of leadership in a digital context amongst women who are members of the LAM community. 2) Investigate why they have turned to the LAM digital initiative to exercise influence in their profession; and, 3) Explore women's opinions regarding their online interactions on LAM, including how those opinions have influenced their leadership identities and professional influence/development.

Methods: To explore the emergence of women's leadership in a digital context, a sequential explanatory mixed method approach was adopted. In phase one, a questionnaire was developed based on literature review findings. The questionnaire was disseminated through the LAM website and affiliated social media pages. Seventy-nine women took part in the quantitative phase and data were analyzed using descriptive statistics. Women who expressed willingness to participate in phase two were invited through email to take part. In phase two, 15 semi-structured interviews were conducted. Qualitative data were analysed using framework analysis.

Results: In the first phase, respondents agreed or strongly agreed with definitions provided for leadership in a digital context. Respondents were reluctant to define their use of digital tools as a bid for influence in medical education. In the second phase, qualitative data revealed that women perceived digital tools as novel method of influence for women. However, they identified several issues that deter them from utilizing such tools, including fear of appearing unprofessional and a lack of knowledge on how to influence people online.

Conclusion: The potential of digital media as a tool to exercise influence and leadership for women in their profession is promising. For Saudi Arabian women health professionals in medical education, media such as LAM can provide a complementary forum to their real-world leadership and can extend their influence beyond their work environments.

Dedication

I dedicate this work to my family, for their unwavering support.

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Chapter 1: Introduction

Women's leadership in medical education has witnessed significant attention from scholars over the last five years. The wealth of studies conducted, mainly in Western contexts, sheds light on the lack of women in leadership (Doyle, Pederson, & Meltzer, 2016; Hofler et al., 2015; Weiss et al., 2014; Baecher-Lind, 2013; Burden et al., 2015; Cancian, Aguir, & Thavaseelan, 2015; Carr et al., 2018; Cheng et al., 2006; Han et al., 2017), the barriers between women and leadership (Carr et al., 2018; Ellinas, Fouad, & Byars-Winston, 2018; Girod et al., 2016; Monroe et al., 2015), and the solutions proposed to address the leadership gap (Dannels et al., 2008; Dannels et al., 2009; Helitzer et al., 2014; Levine et al., 2015; McDade et al., 2004). Like other scholarly bodies of knowledge, women's leadership studies are shaped by contextual influences such as societal culture, professional practices, and individual beliefs. As a result, current studies addressing women's leadership may not necessarily reflect women's leadership in the non-Western context of Saudi Arabia.

In keeping with current reforms in Saudi Arabia (Vision 2030, 2018), many medical schools aim to empower women. To draw on women's unique views and experiences, several women have been appointed to key administrative positions in medical education. An example of relevance to this project is the deanship of one medical school in a public university. At the University of Taif, the position of medical school dean is held by a female, Professor Dalal Nemenqani (Al-Sulami, 2017). While her appointment is welcomed affirmative action, how it will be sustained in coming years remains to be seen. Women leaders remain a minority in medical education with the majority of leadership positions held by men. To meet the challenges facing women's leadership, it is important for women to recognize their potential, and for them to use innovative channels in exercising their influence.

One way of realizing women's leadership is by utilizing novel digital tools. While there is great potential for developing leadership in a digital context (Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017), how leadership is enacted in a digital context and how women perceive it are relatively unexplored areas. The proposed study is an initial consideration of how women's leadership in medical education might be advanced in Saudi Arabia through digital media, aiding Saudi women health professionals in gaining more influence.

This study is a continuation of my previous work on women's leadership in medical education where I found that Saudi women had few leadership opportunities and experienced

cultural barriers to career progression that were unique to the context of Saudi Arabia (Alwazzan & Rees, 2016). The slow growth of women's leadership in medical education was due to a combination of barriers at individual (e.g. career-family balance), interpersonal (e.g. lack of mentoring), and institutional (e.g. lack of gender equality policies) levels. It is my intention to expand what was uncovered in that study, taking a stance as a researcher that encourages transformation, rather than aiming for mere adjustments of current organizational and professional policies, structures, and systems (Ferguson, 1984).

Adopting a transformative stance, I started the Mededlam.com (hereafter "LAM") initiative in 2015. The initiative draws on the meaning of the word "LAM", which translates from Arabic to English as "to bring together"). The website (see appendix A for snapshot) aims to help medical professionals in their leadership, teaching, and research roles by disseminating articles, infographics (see appendix B for a sample), and podcasts (see appendix C for hyperlinks) that tackle different topics in medical education. In alignment with a transformative stance, the website is inclusive; it empowers individuals and groups to be active around a shared social and cultural transformation in medical education and practice. While building this website, I started to notice how women seemed particularly attracted to and engaged in the discussions and activities occurring on and through it. For example, women wrote articles for the website and then discussed them on the associated Twitter page (see appendix D for a sample). I began to see their participation as a form of women's leadership in a digital context particularly as a means to exert influence. These realizations and insights about Saudi women's participation and leadership in a digital context led to the current study.

In conceiving the study, I adopted Northouse's (2010) well-established definition of leadership, which views leadership to be "a process whereby an individual influences a group of individuals to achieve a common goal" (p.3). Although I adopted this definition to anchor my exploration, the purpose of this study is to understand how leadership unfolds in the digital context. Therefore, my understanding of the phenomenon of women's leadership, embedded in both its sociocultural and digital contexts, evolved throughout the research process.

I designed the current study using an explanatory sequential mixed-methods design (Creswell, 2003). The first phase aimed to explore Saudi women health professionals' common understandings of how their leadership works in a digital context through a questionnaire. In the second phase, I explored why they have turned to LAM to exercise influence in their profession, and how their online interactions on LAM have affected their

leadership identities and perceptions of influence on their profession (see appendix E for research plot). The second phase used semi-structured interviewing to gather data. This study was designed such that the women's vantage point is at the heart of it; but I also aimed to situate women's individual experiences in the meso context of medical education and the macro context of Saudi Arabian society and its recent reforms with respect to women's roles, including their leadership.

Conceptually, I define the meso level as the women participants in this study who belong to the LAM digital community and the communities of people with whom they engage on a regular basis in medical education settings (i.e., undergraduate, postgraduate, and continuous medical education). For some participants, this meso level would include their students or colleagues in their place of work; while for other participants it would include people who belonged to their specialty or profession. Additionally, for the purposes of this study, medical education includes medical school environments, graduate residency programs, and training hospitals.

At a macro level, I refer to the cultural aspects that make Saudi Arabia's medical education unique from other settings. At this level, I acknowledge the broader societal changes, namely, the professional landscape for women that is expanding, the potential effects these changes are having on the career experiences of women, and the need Saudi women may have for using digital tools to realize their own potential as leaders. Drawing on Hofstede's cultural dimensions (Hofstede, 2003), I examine research findings in depth, broadening our understanding of cultural influences on women's views and experiences.

In what follows in the current chapter, I explain the purpose of this study in more depth and outline the problem statement. In the second chapter, I review the literature addressing women's leadership in medical education, as well as the literature on the intersection between leadership and the digital context. The third chapter provides a review of feminist theoretical foundations and the transformative stance I have adopted for this project. That chapter also provides an overview of how this project is approached conceptually; in particular, given the complex and interacting contextual forces that influence women's experiences in Saudi Arabia, this study is conceptually oriented by three levels of analysis: micro/individual; meso/institutional; and macro/cultural. Moreover, I give an overview of Hofstede's cultural dimension theory, which I have used to ground my research findings in their cultural context. In the fourth chapter, I describe and explain the study's mixed-method approach. Chapter five reports on the findings from the study; while chapter six discusses those findings in light of related literature and the theoretical and conceptual

views chosen to understand the phenomenon of digital leadership. Moreover, in the sixth chapter, I reflect on the strengths and limitation of the study, and its contributions to theory, methodology, and practice. Finally, I offer recommendations for future research and practice.

1.1 Problem statement

This study aims to explore Saudi Arabian women health professionals' experiences of leadership in a digital context. There is a lack of clarity in the literature around leadership in a digital context (Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017), it is a concept in constant flux (Ahlquist, 2017). Therefore, it is vital first to establish a common understanding of leadership in a digital context amongst Saudi women health professionals. Second, upon establishing a common understanding of leadership in a digital context, this study aims to explore reasons motivating Saudi women health professionals to turn to digital projects such as LAM to exercise influence in their profession. Given that most studies conducted in this field are based on Western views and experiences (Adamson, Brady, & Aitken, 2017; Dannels et al., 2009; Dannels et al., 2008; McLean et al., 2013; McDade et al., 2008; Morahan & Bickel, 2015), exploring why women seek influence through unconventional means (i.e., digital media) in medical education would help in articulating the unique experiences of women health professionals in the Saudi Arabian context. In addition, digital mediums are expected to have a profound effect on those who become leaders in such a context (Ahlquist, 2014; Tremblay, 2017). Therefore, third, this study finally aims to explore the effect of women's online interactions on LAM and its affiliate social media pages on their leadership identity and perceptions of influence in their profession.

1.2 The purpose of this study

1.2.1 The concept of women's leadership in medical education and the importance of context. This study aims to build an understanding of the phenomenon of women's leadership embedded in its sociocultural and digital contexts. Based on an initial search of databases for scholarly literature review addressing women's leadership in medical education, I found that most studies have been conducted in Western contexts and published in Western journals. In fact, the journals in which studies of women's leadership in medical education commonly appear are: *The Journal of Women's Health*, *Academic Medicine*, *British Medical Journal* (BMJ), and *Medical Education*. These journals' increased visibility, accessibility, and high rank in major journal ranking sites, ensures their global readership. As a result, work published in them (70% of which is based on studies conducted in the United

States) may create a standard based on Western-centric (predominantly American), values and experiences. This Western-centricity foregrounds pressures under which researchers, eager to gain visibility for gender empowerment in a Saudi Arabian or other non-Western contexts, may be tempted to model Western developments and achievements. In previous work, I followed such a route by advising Saudi medical schools to prepare women for leadership positions through faculty development (Alwazzan & Rees, 2016), similar to Western experiences (McLean et al., 2013; Helitzer et al., 2017). I now recognize that this recommendation comes with a set of assumptions about global similarities and ideology, or what some researchers are calling a "world culture theory" about international convergences of education systems, including higher education, due to the increasingly influential role of supranational organizations (Anderson-Levitt, 2003; Meyer & Ramirez, 2000). A world culture perspective, however, gives little attention to the specificities of sociocultural contexts. One risk of implementing research models or programs without taking into account the specificities of sociocultural context are that such efforts may stifle rather than help Saudi women health professionals in their career progression.

To understand better the consequences of context on women health professionals' leadership, it is important to first circumscribe what this study defines as context. Different studies have explored the role of women in medical education from societal/institutional, organizational/professional, and/or individual levels. At the societal level, the nature of Saudi Arabian society significantly influences medical education (Mobaraki & Soderfeldt, 2010; Lefdahl-Davis & Perrone-McGovern, 2015). Undergraduate medical education is gender-segregated. In Saudi medical schools, hierarchy remains vertical. Moreover, there are gendered structures and norms that are often taken for granted (Moghadam, 1998). Gendered norms can also manifest in positions of leadership (e.g. university chancellor) as being restricted to men. Additionally, major administrative positions are largely held by male faculty including deans and vice-deans while female faculty, not only have minimal administrative roles, in a cross-sectional study were found to concentrate at junior faculty positions in one public university (Al-Tamimi, 2004).

In Saudi Arabia, universities are governmental, semi-governmental, or private. Some medical schools were established as faculties in universities; while other medical schools were established as an adjunct to long-standing hospitals. The student body of governmental medical schools is homogenous, mainly made up of Saudi nationals. Such schools are also all governed by the same policies. Medical schools in semi-governmental and private universities tend to be more heterogeneous in their student body, and have their own policies

that are intended to align with the government's higher education policies. Private medical schools, however, pay considerable attention to diversity and inclusion of women. Awareness around diversity and inclusion in private schools encourage affirmative action towards women as medical students. For example, one private Saudi university uses the percentage ratio of women to men higher education students of 51:49, as an advertisement for the university's diverse and inclusive environment (Alfaisal, 2018).

At the organizational/professional level, Saudi medical education is heavily influenced by Western medical practice and education (Al-Sulaiman, 2000). For example, medical curricula are taught in English (Telmesani, Zaini, & Ghazi, 2011). Despite the fact that Saudi society is mainly an Islamic society, medical practice draws on positivist and post-positivist paradigms, which are often at odds with Islamic thoughts and beliefs (Khzali, 2010). Western positivism claims that the scientific method will deliver all truth eventually through experimentation. According to Islamic thought, not all truth can be attained by humans. Islam is a faith that relies on the belief that all human activities are subjective, and that the attainment of knowledge will always be flawed (Khzali, 2010).

The influence of Western ideology on medical practice in Middle-Eastern curricula marginalizes the native Arabic language and Islamic ways of knowing, that may make Saudi physicians less prepared for medical practice that caters to a Saudi population. As a Saudi born physician and medical educator, I am aware of the influence of Western thought on myself, given my training in the Saudi medical education system and the subsequent graduate training I received in Western institutes. Taking a critically reflective perspective on the confluence of English language and Western influences on my development as a medical educator, I developed the LAM digital initiative in 2015 with the explicit intent of addressing the neglect of the Arabic language in Saudi medical education contexts as well as the local knowledge and context of physicians and their patients in Saudi Arabia. The website itself is in Arabic and the developed tools and other information on the site draw on Arabic as well as Western medical literature. Women's leadership experiences are shaped by the contextual unique setting and the tensions between Western and Islamic thought. For example, there remains a controversial notion, based on Islamic thought that ultimate leadership is male amongst a few Saudi women (Alwazzan & Rees, 2016), although there is an organizational move towards involving women more as leaders.

Saudi women leaders may be appointed to major leadership positions, but how sustainable activities of appointments are and how such activities shape women's individual careers are problematic. No clear pathways to leadership currently exist for upcoming women

faculty members. An affirmative action such as making an appointment of a woman as dean, mentioned previously, is a considerable step forward to empower women in medical education, but further steps will be necessary to help them gain more influence in higher education institutions. For instance, the increase in women leaders in Western medical education is a direct result of the increase in the number of women in medicine (Helitzer et al., 2017), where women may reflect the population they represent and may have robust supportive systems from other female leaders and faculty. Women in Saudi medical education have not yet achieved a critical mass. As a result, women who are appointed to leadership positions may suffer from isolation and may have less satisfactory careers (Pololi & Jones, 2010). In addition, the appointment of women into leadership positions doesn't necessarily guarantee that this will provide them with satisfying individual careers.

To deepen understanding of the Saudi sociocultural context, I will draw on Hofstede's cultural dimensions theory (Hofstede, 2003). Based on his work on workplace values across fifty countries, Hofstede proposed six dimensions that researchers can use to understand differences between sociocultural contexts. The dimensions are power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, long term versus short orientation, and indulgence versus restraint. According to Hofstede, these dimensions can help researchers understand how different societies deal differently with issues such as equality. Hofstede's work, for example, echoes the previous discussion on the power difference between men and women and the need for affirmative action, for example, in Saudi medical education. I expand on Hofstede's cultural dimensions theory and its implications for the present study in the conceptual framework chapter (Chapter 3, Section 2).

At the individual level, based on my observations and interactions with women who are members of LAM, I found women were more engaged with the website than men followers. Women tended to express more interest in contributing to the website with topics they thought were important to communicate to the Saudi academic medicine community. Although this may be interpreted as women being more communicative than men in general (Kimbrough et al., 2013), my first-hand experience in running LAM also suggested that women may be inclined towards unconventional mediums and ways to address issues in medicine. A preliminary insight (aligned with transformative thought) is that women through their interaction with the site may be promoters of positive change for the Saudi health professions.

1.2.2 Leadership and the digital context. A novelty in this study is its exploration of Saudi women's leadership in a digital context. As will be discussed in more depth in the literature review (Chapter 2, section 1), leadership has been narrowly defined when it comes to conceptualizing and studying the intersection of leadership and gender. For example, researchers tend to conceptualize leadership in medical education as a senior administrative position in the organization (Carr et al., 2015; Carr et al., 2018) and not as a process of influence, as it is commonly defined in the leadership literature (Northouse, 2010). Merely equating leadership to organizational positions fails to recognize leadership as phenomenon that can emerge and be cultivated in a variety of people and locations in organizations. This may result in loss of potential leadership talent, especially amongst women. Thus, this approach to studying and promoting leadership may limit women's leadership and its potential to bring about positive change in medical education. In this study, I recognize the limitation (lack of exploration of leadership as a process of influence), and bypass it to study leadership in an unconventional format, the digital context, where domains of leadership like power, hierarchy, and influence unfold differently. Whether the Internet is empowering or disempowering to individuals is debatable. On the one hand, the Internet's technical structure allows horizontal networks of influence with power distributed amongst individuals (Endersby, Phelps, & Jenkins, 2017), an aspect of leadership that would help Saudi women health professionals overcome a vertical hierarchy which concentrates power in the hands of a few individuals and may deter women from taking on leadership roles in medical education. On the other hand, the digital context is not regulated and may prove more harmful to those women health professionals who wish to exercise influence. For example, women may not know how to best utilize digital tools for educational purposes.

1.3 Researcher's stance

The processes of every scholarly inquiry are directed by a set of beliefs and values (Guba & Lincoln, 1994). The epistemological stance I have taken for this study is constructionism (Table 1). Constructionism is defined by Crotty (2003) as: "the view that all knowledge and therefore all meaningful reality as such is contingent upon human practices, being constructed in and out of interaction between human beings and their world and developed and transmitted within an essentially social context" (p.42). What participants share in this mixed methods study, is therefore, seen as their individual constructs and interpretations.

Table 1

Theoretical Underpinnings

Epistemology	Theoretical paradigm	Methodology	Method
Constructionism	Feminism	Mixed methodology	Questionnaire and semi-structured interviews

Constructionism, the epistemological orientation of this project, aligns well with the mixed method design. The quantitative instrument developed for this study aims to establish common understandings as well as document respondents' differences in perception of digital leadership. The purpose of phase one is not to come to any statistical conclusions. In alignment with the previous definition by Crotty (2003), the meaning that respondents give to digital leadership are seen as socially constructed, dynamic, and based on their interactions with one another through LAM. Moreover, qualitative methods, with the depth they provide align with the constructionist view because they provide a wealth of contextual information (Creswell, 1998). In this project, I recognize the complexity of the phenomenon being studied and the overwhelming influence of culture and society. Therefore, at this initial phase of exploration, I utilized both quantitative and qualitative approaches to understand a complex phenomenon.

Positionality, reflexivity, and *triangulation* are central concepts I have considered while designing this project. My positionality and my worldview as the researcher conducting this study have considerable influence on how this research project came to be, the methods chosen to explore the topic, and how the results are interpreted. As the creator and moderator of the LAM initiative, I am an insider to the phenomenon of leadership in a digital context and am likely more sensitized to the importance of influence for women in Saudi medical education than are outsiders to, or followers of, LAM. The initiative came to fruition in 2015 out of my desire to reach out beyond my immediate professional circle. I can relate this move, at least in hindsight, to my status as a woman and junior faculty member of a medical school. My work as the moderator of LAM led to my doctoral work. As will be explained in Chapter 4 on the methods for this study, I formulated the research questions based on my experience with LAM. Additionally, in moderating the website and its affiliated social media accounts, I have formed some tentative insights into the development of leadership in a digital context. First, the importance of contextualization of knowledge and the role that it plays in making digital content effective. Through LAM, I have come to recognize the

importance of drawing on indigenous knowledge and the use of the Arabic language in connecting to a Saudi audience. Second, available tools such as Twitter are free and powerful. I have come to realize that these tools can be used to create a community and affect positive change. These notions have shaped how I came to the research project described in this dissertation.

While definitions of reflexivity vary, here I consider it as being actively aware of the context of knowledge and the role of the researcher in constructing research. In other words, a researcher must be aware of the relational complexities that make up scholarship and the power dynamics that produce them (Finlay, 2002). Reflexivity moves beyond self-referential rhetoric, towards being accountable as a researcher for the way data is interpreted (Morawski, 1994). It was important to study gender narrative without unintentionally reinforcing gender inequality. It was therefore important to review different feminist schools of thought in the third chapter, in an effort to recognize and declare assumptions that often underpin inquiry.

Triangulation, a research practice that aims to increase validity of research findings, is commonly practiced by qualitative researchers (Patton, 1990). There are four kinds of triangulation that contribute to the verification and validation of analysis (Patton, 1999), including method triangulation (i.e. using different data collection methods), triangulation of sources (i.e., using a variety of data sources), analyst triangulation (i.e., recruiting more than one analyst to review data), and theory/perspective triangulation (i.e., using multiple theories to interpret findings). In this project, method triangulation was achieved through the mixed method design, source triangulation included questionnaire data, interview transcripts and field notes, analyst triangulation was targeted using methodological experts on my dissertation committee to review the findings of phase one before proceeding to phase two and the inclusion of an Arabic speaking social science colleague to concurrently code qualitative data at the outset of phase two, and theory triangulation was pursued through the application of feminist theory and Hofstede's cultural dimensions during data analysis and interpretation.

In this first chapter, I introduced the study, explained its purpose, and given a brief background of the study context and my stance as a researcher. To situate this study in the broader literature, in the next chapter, I go on to review work relevant to the purposes of this study.

Chapter 2: Literature review

To understand women's leadership in a digital context and potential for influence, I reviewed two relevant areas, namely: women's leadership in medical education, and leadership in a digital context. In the first section of this chapter, I highlight the importance of women's leadership as an area of scholarship in medical education, and explain my approach to finding relevant literature on this topic. Next, I discuss how women's leadership has been defined in scholarly circles. Then I discuss the major barriers to women's leadership addressed in the literature including: the culture of medical education, gendered norms, recruitment practices, lack of mentorship, pathways to leadership, and how leadership identities are developed. Finally, I unpack the different ways women's influence has been realized in medical education.

In the second section, I follow the same approach as described above. I first outline my approach to finding relevant studies covering the concept of leadership in a digital context. I then explore the digital terminology and clarify how I will be using it in this project. I conclude by presenting and discussing the three emerging themes from the literature: digital literacy, scholarship, and communication.

2.1 Women's leadership in medical education

In recent years, a considerable amount of work addressed gender equality in medical education (e.g., Valantine et al., 2014; Carr et al., 2003; Rochon, Davidoff, & Levinson, 2016; Allen, 2005; Brown, Swinyard, & Ogle, 2003; Carr et al., 2000). Those works often arrived at women's leadership indirectly, regarding it as one of many pathways to creating egalitarian learning/working environments. A representative document of those works is the American Association of Medical College's "Women in U.S. academic medicine and sciences: Statistics and benchmarking report" (2012). The report is a commendable effort that tracked women's progress in medical education overall. It documents women's entry into medical schools as students, distributions of positions as faculty, hiring, promotion and departure trends, and women having leadership positions in comparison to men. Although gender equality and women's leadership are interconnected, to recognize the full potential of women's leadership, there is a need to differentiate between the two. The AAMC report draws on a liberal feminist view, where it suggests that women's leadership is achieved by increasing the numbers of women in leadership positions. Increasing the number of women is certainly a step forward, but it is not enough to realize the full potential of women's leadership. In fact, efforts to increase the number of women are largely motivated by liberal

feminist views that underpin research in this area. Notable scholars, such as Bryson (1999) critique liberal feminism for its emphasis on counting the number of women in professions as the main measure of gender equality. Beyond the number of women, the quality of their careers and their ability to participate in change are vital. Morahan and Bickel (2004), explain that what women face in medical education is systemic in nature. Medical schools have a system that reinforces values and ideals that shape women's careers negatively and that merely increasing the number of women will not change the system.

In the literature review, I first tease out work focusing solely on women's leadership in medical education. Second, against organizational criteria: definitions of leadership and dimensions; and commitment to social change thinking, I articulate the novelty of this study. In February 2018, I conducted a search for and review of the literature on women's leadership in medical education. The search included major databases used in the health sciences: 1) Ovid MEDLINE; 2) EMBASE; 3) CINAHL; 4) Ovid PsycINFO; 5) all EBM Reviews on Ovid-ACP Journal Club, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, and Cochrane Central Register of Controlled Trials (1st quarter); and 6) ERIC. Searches were restricted to English, using a combination of key terms including "women", "leadership", and "academic medicine" (see appendix F for a full overview of search strategy), and 4024 of papers were retrieved at this stage. I did not restrict the study to a timeframe, as I wanted to gain a perspective on the history of women's leadership development.

To reduce the sample size and ensure its relevance to the study, I developed and applied the following inclusion criteria: 1) English; 2) Original study utilizing either quantitative or qualitative approaches; 3) The study must explore women's leadership in medical education including conceptualizations of leadership, leadership views and experiences of women in organizational positions, women faculty at any level, and studies of leadership development programs. Commentaries, editorials, and perspectives were excluded, as well as studies covering gender equality in medical education that did not address leadership.

Using the above criteria, a manual search of the titles and abstracts resulted in a sample of 45 studies. In reviewing those 45 studies, one additional study was uncovered in the bibliographies of certain papers that were deemed relevant and added to the review. This resulted in a final sample of 46 articles.

Using an excel sheet, I extracted descriptive information on each study: study type (quantitative versus qualitative versus mixed-method), study design (e.g. cohort and narrative

inquiry), theoretical perspective, number of participants, response rates where applicable, findings, strength and limitations. In a separate sheet, I began to group studies according to emerging themes and sub-themes. Those themes are: 1) definitions of women's leadership; 2) barriers to women's leadership in the organization; 3) the extent of influence women have; and 4) women's leadership identity development. What follows is a discussion of those themes and their emerging sub-themes.

2.1.1 Definitions of leadership in women's leadership literature. Reviewing the literature revealed two main themes. First, there was a lack of clarity in how leadership was defined, with leadership being implicitly defined as organizational position. Second, where leadership was explicitly defined, it was categorized into the who and the how of leadership, and equated to trait, influence, and transformation.

Most studies referred to leadership as an official *organizational position* within a medical education setting (Bismark et al., 2015; Carr et al., 2015; Carr et al., 2018; Dannels et al., 2008). An example of these studies is one by Carr and her colleagues (2015), who conducted interviews with representatives and senior leaders at 24 US medical schools. The objective of the study was to assess gender climate and find an explanation for the women's lack of career advancement through the eyes of senior leaders in medical education. Amongst their findings, the authors reported senior leaders' perceptions of lack of parity in rank and leadership by gender.

What is of interest is how the authors explicitly stated that senior leadership in academic medicine contexts were medical school associate dean, dean, chair, deputy provost, or university chancellor. The authors also reported that some participants explicitly described their role in the promotion and tenure committee as leadership positions. The interchangeable use of leadership with organizational position is understandable but limiting because it merely reflects the hierarchical structure of academic medicine. More importantly, leadership was not seen as a phenomenon, where emergence is an important characteristic.

Instead when leadership is addressed in the 46 articles reviewed on women and leadership in medical education, leadership is often seen as a formal position of authority in the organizational hierarchy that one gets promoted into by others who already have such leadership positions and the formal levers of power and influence that such positions provide. This is problematic because it limits our understanding and recognition of leadership to the small group of senior administrators or officials who inhabit formal positions of authority and organizational power, which frequently translates into the leadership of men (Bickel et al.,

2002; Carnes et al., 2017; Yedidia & Bickel, 2001). Therefore, any emergence or understanding of informal leadership, such as the leadership of women, and including women's leadership that can be cultivated into formal leadership within medical schools may not be recognized.

In the second theme: the adoption of definitions of leadership, two studies explored understandings more explicitly and recognized leadership's many facets. First, was my previous study (Alwazzan & Rees, 2016) which documented women's understandings of leadership in medical education. In the 25 semi-structured interviews, women volunteered their understandings of leadership. Some women understood leadership in terms of who leads (individual versus team), in terms of gender (specific to male versus gender neutral), and in terms of official qualification (certification versus experience). Moreover, participants defined leadership in terms of *how* to lead: leadership was considered by some participants as innovation and creating new ways of doing things versus management and maintaining the status quo. Additionally, Saudi women medical educators saw leadership as both horizontal and vertical. Horizontal leadership where leaders and followers were on equal grounds, and vertical leadership where leaders were the top of the hierarchy and had license to punish, reward, and govern. This study provides a good base to further our understandings of leadership; however, the problem with my previous study is that it did not use a framework for leadership definitions. Women's understanding of leadership seemed tailored to their personal experiences, and those were not situated within the broader literature of leadership.

The second paper that explicitly explored understandings of leadership amongst women medical educators was conducted by McDade and colleagues (2008). As part of the Executive Leadership Program in Academic Medicine (ELAM), the authors collected 283 definitions of leadership from classes of 1996-2004. Participants' definitions were then mapped out to Rost's (1991) framework and, using the voices of women, a framework for leadership understandings was developed.

McDade and her colleagues (2008) provided leadership definitions women had as part of a leadership development program. The most common definition women shared was leadership as *trait*. According to women leaders, a leader is someone who sees the big picture, someone who looks inwards and outwards, has integrity, and someone who has a high degree of professional expertise. Moreover, leadership was defined as *influence*, which was the second most common theme amongst women leaders. This is a very important difference and finding that is relevant to the current study which emphasizes women's leadership as being about influence versus or in addition to women's positionality in formal

roles of organizational authority. McDade et al. saw influence as inspiring others to engage in team work and encouraging them to maintain their own goals. Another important definition McDade et al. found was leadership as *transformation*, equating leadership to implementing and achieving organizational change. Participants emphasized that change required addressing barriers within the organization and getting "buy-in" from faculty.

In this dissertation project, I attempt to take a slightly different approach. As I have demonstrated above, most studies on gender and leadership in medical education do not extend beyond official positions when studying leadership, and their findings may be limited as a result of this narrow definition of leadership. I do not dismiss the understanding of leadership as official position and see the importance of these studies; however, I appreciate that our understanding of leadership can be expanded. Unlike these studies, I come into this project with an understanding of leadership as a distributed and relational phenomenon, such that its emergence can also be traced to actors in non-formal leadership positions (Grogan & Shakeshaft, 2010; Gronn, 2002).

Furthermore, unlike what I discussed in previous work (Alwazzan & Rees, 2016) and what is presented by McDade and colleagues (2008), leadership does not necessarily have to be within formal organizations such as medical schools. I argue that the explicit definitions discussed above: the who and how of leadership, and leadership as influence and transformation may require stepping outside of the organization to be truly explored. Women's understandings of leadership in both studies are shaped by their organizational experiences, and those experiences are often shaped by gender inequality. It is difficult to explore the emergence of women's leadership within the constraints and barriers of organizations structured by gender inequality. In this study, I step outside of the boundaries of traditional organization by using the more boundary-less, distributed digital context to explore the notions of leadership, influence and transformation in medical education for women health professionals.

2.1.2 Barriers to women's leadership in medical education. There are several barriers women face when seeking leadership and while being leaders. These include the hierarchal culture, gender norms, biased recruitment and appointment practices, hostile work environments, and lack of leadership mentoring and pathways. What follows is a brief discussion on each.

2.1.2.1 Medical education culture. The culture of medical education is often seen as hierarchical and not conducive to gender equity (Buell, Hemmelgarn, & Straus, 2018; Krupat et al., 2012). This idea is heavily documented in the literature as the main hurdle women face

when striving for leadership. Values that makeup the culture include competitiveness and self-promotion, while collaboration and support are undervalued and are seen as weakness. According to a large US study, a quarter of medical education faculty reported being dissatisfied with the work environment and have considered leaving academic medicine with the past year of the study (Pololi et al., 2012). Of interest to this study, women who are traditionally excluded from power, were found to advance more slowly than men in this culture and were more likely to leave (Pololi et al., 2013). For example, the unhealthy culture puts a lot of emphasis on research production and the ability to secure grants. In US schools, especially, securing tenure depends on research production and grant generating. The pressure that it creates for faculty members, women and men alike, results in incongruence between individual values and organizational values. Moreover, it creates a culture of unnecessary competitiveness rather than collaboration. Often these barriers are the reason why women depart from academic medicine and, as a result, academic medicine loses promising leadership talent (Pololi et al., 2012).

2.1.2.2 Gender norms. One barrier, women in medical education face, is gendered norms. Yedidia and Bickel (2001), conducted interviews with 34 chairs and 2 division chiefs in five medical specialties. The participating men and women leaders highlighted gendered norms as a barrier to women's advancement, noting that academic medicine was not separate from broader social norms that expect women to prioritize family over career. It is important here to differentiate between women and men in reinforcing these norms. Women tend to self-monitor and plan for their careers based on these norms, choosing specialties that are more conducive to these gendered norms such as pediatrics, family, and community medicine (Alwazzan & Rees, 2016), as well as taking on leadership positions that are educational in nature and are less prestigious (Baecher-Lind, 2013).

Women's nomination and eligibility for leadership positions is often judged by existing men leaders who expect women to be caring and nurturing and thus more suited for educational positions, rather than for positions such as department chair and medical school dean that, in the view of men leaders, require assertiveness and authoritativeness (Bates et al., 2018; Burgess et al., 2012). Furthermore, gendered norms that put women at career disadvantages are perpetuated by the informality of recruitment practices (Van Der Brink, 2011), and non-transparent promotional procedures that are often done behind closed doors (Morahan & Bickel, 2004).

Powerful values and attitudes about gender are deeply embedded in social structures, medical schools are no exception. Such norms often interact to produce inequality and

institutional dynamics that prevent women from realizing their full potential as leaders. Despite women reaching a "critical mass" of Western academic medicine, Helitzer and colleagues (2017) argue that not much has changed for women in terms of becoming a leader or bringing about change. Instead, the authors argue that "critical actors" leaders, both women and men, are needed to create a healthier culture for all.

2.1.2.3 Biased recruitment and appointment practices. Appointments of professors in academic medicine relies on recruitment by invitation. As a result of this practice, Van Den Brink (2011) reports that women are widely under-represented in senior positions in the Netherlands. Although there is no shortage of women who are fit for the job, certain gender practices in recruitment stand in the way of female advancement. According to Van Den Brink, although the hiring of professors in academic medicine is reported to be gender-neutral, close inspection of the appointment process reveals that when it comes to hiring a female professor not only is her leadership and commitment questioned, but closed male social circles make it extremely difficult for her to reach the top. In addition, outside recruiters' views (who also tend to be male) of women as *different* further alienate women from professorship and leadership.

2.1.2.4 Hostile work environment. Hostility in academic medicine is multifactorial: hierarchy, power imbalances, dealing with difficult medical conditions, and long working hours together create hostile environments. Women faculty members' experiences of hostility are perceived as more pronounced (Yedidia & Bickel, 2001). It seems that the experience of women leaders versus women faculty in general are not that different (Kass, Souba, & Thorndyke, 2006), and that women leaders came to where they are as a result of resilience (Kass et al., 2006), perseverance (Kass et al., 2006; Pingleton et al., 2016), self-promotion (Pingleton et al., 2016), finding a good mentor who usually is a male (Pingleton et al., 2016), and the ability to assimilate into the culture rather than change it (Kass et al., 2006; Conrad et al., 2010).

Women's strategies to work within the hostile work environment brings about the notion of women leaders who assimilate into the system. Assimilating to the culture (Pololi & Jones, 2010), an approach aligned with liberal feminist principles, can be contrasted with women who aim to change the system and the values the underpin it, aligned with transformative feminist perspectives. The latter is not a new set of ideas, but it has not been explored in depth with regards to women's leadership in medical education. Morahan and Bickel (2002) suggest several measures to change the situation for women in academic medicine. The authors suggest that hostile work environments that force women to change in

order to fit in are based on outdated policies. According to the authors, the culture needs to be revised away from the model of the "ideal worker" that still persists from the 19th century when men worked and women were tasked with homemaking, childbearing, and childrearing, observing that current career development still seem to be rooted in this idea and thus creates an impossible ideal for women working in academic medicine to meet.

 2.1.2.5 Lack of mentorship. An important aspect of career development is mentorship, defined as "a dynamic, reciprocal relationship in a work environment between an advanced career incumbent (mentor) and a beginner (protege), aimed at promoting the development of both" (Healy & Welchert, 1990, p. 17). Whether formally or informally junior faculty are typically attracted or matched to senior faculty members (Pololi, Knight, & Dunn, 2004). It is well documented that women receive less mentoring (Pololi et al., 2012; Yedidia & Bickel, 2001; Erlich, Cohen-osher, & Goodell, 2017; Fishman et al., 2017; Curtis et al., 2016; Salas-Lopez et al., 2011). While interviewing women holding positions of department chairs, Yedidia and Bickel (2001) found that women leaders perceived the culture surrounding mentoring in academic medicine to have an "old boys club" dynamic that made it difficult for women to gain access to mentorship. These women leaders saw that the lack of mentoring resulted in less women in leadership positions. While the lack of mentorship is well established, how to address it is a serious research gap. For example, how significant is mentorship in reaching leadership positions? Although not the focus of this thesis, lack of mentorship may contribute toward creating an unwelcoming environment thus pushing women toward other means of connecting with colleagues, such as the use of digital tools.

 2.1.2.6 Career planning for leadership or pathways. A final barrier women in academic medicine have experienced, is the lack of pathways to leadership. There is a lack of clarity on how women can nominate themselves or be nominated by others for leadership positions. In interviews with medical school deans, Dannels et al. (2009) explored gender climate and the importance of leadership development programs. The authors found that medical school deans perceived a lack of pathway which women can take towards leadership. To explore pathways women can take would require an investigation of medical school policies on gender equity and leadership involvement. Although several studies document leadership development programs (Dannels et al., 2008; Helitzer et al., 2014; Levine et al., 2015; McDade et al., 2004; Spalluto et al., 2017; Stadler et al., 2017), none guarantee leadership positions for those who complete such programs. Beyond these articles, there are no studies that explore how women can reach leadership positions in medical schools.

The previously discussed barriers to women's leadership may leave women who aspire to be leaders dissatisfied with their careers. It is the premise of the current study that such organizational barriers stand in the way of women who wish take on more leadership responsibilities and exercise influence. I believe that leadership barriers must be addressed and cultural change must take place for medical schools to be more inclusive of women from within medical schools and universities. I have reviewed the barriers to women's leadership in this dissertation to show why exploring and expanding on alternate ways of leading and of exercising influence are merited, especially for women who are in a Saudi context (as I explain in Chapter 3, Section 2) who, because of the specific sociocultural and organizational dynamics in Saudi Arabia, experience a unique set of organizational barriers to their influence and leadership (Alwazzan & Rees, 2016).

2.1.3 The extent of influence women have in medical education. There are two manners in which women have influence in medical education. First, after acquiring organizational leadership positions, women tend to use their authority and power to influence others (Freischlag & Silva, 2016; Pololi et al., 2012). For example, in their qualitative study of women's coping strategies, Pololi et al. (2012), describe how women at an interpersonal level created *microenvironments*, modelling favorable behaviors for their direct colleagues, both men and women, to emulate. The authors observe that this approach was effective in organizational settings, but did not have an effect on the broader professional society. Moreover, women of power and authority, had dual identities, whereby they maintained their position of influence by acting in a manner conducive to the organizational culture, but also used what influence they had to help other women navigate the structures and systems to advance their interests or careers. Elsewhere, Pololi and Jones (2010), observe that the having dual roles was a successful strategy, but it was not sustainable because women of some power gain their influence from their seniority, and this influence ends once they retire or leave academic medicine.

The second way women have gained influence for themselves and other women in the broader profession is by establishing leadership programs that cater to women. These programs include the ELAM program (Morahan et al., 2010), the Johns Hopkins Faculty of Medicine Leadership Fellowship Program (Levine et al., 2015), The University of Virginia leadership Program (Sanfey et al., 2011), and the LIFT off radiology program (Spalluto et al., 2017). The purpose of these programs was to bring professional women together and arm them with the necessary organizational skills to help them progress in their academic careers. Such programs are part of a broader plan to address gender inequality in medical education.

In these programs, women learn negotiation, decision-making, priority-setting, networking, and financial departmental management.

The most established of these programs, the ELAM, requires one year to complete. In a pre/post intervention, McDade and colleagues (2004), sought to measure the impact of ELAM on women academicians' leadership capacities. Women participants were found to improve across several aspects of leadership capabilities. Of interest to this study, is a specific leadership construct: political influence, the authors found no statistical significance before and after the program amongst the 79 participants. This finding is limited somewhat because the authors did not define what they meant by influence and did not explain how they incorporated it in their program. Teaching women in academic medicine how to be influential requires further study and is an area for future research to explore.

In the same ELAM program, Dannels et al. (2009), elicited the perceptions of deans on their medical schools' organizational climate and its effect on faculty, policies affecting faculty, processes deans use for developing faculty leadership, and the impact of the ELAM Program for Women. In their self-reported questionnaire, the authors found that deans had a positive impression of the ELAM program (M = 5.62 out of 7), with those having more alumnae reporting greater benefit ($p = 0.01$), and positive influence on alumnae (M = 6.27 out of 7), and increased their eligibility for promotion (M = 5.7 out of 7) as well as an impact on organizational culture.

Leadership development programs do not yet exist in Saudi medical education; therefore, it is difficult to know whether they would provide the same opportunities that Western women have. Furthermore, in the absence of leadership development programs, in the current study I move beyond how women influence within the organization to alternate media were women can gain influence. As will be discussed in a later section of this literature review, my hypothesis investigated in this study is that women in Saudi medical education can move beyond the organization (e.g. medical school) and use digital media to exercise an emerging form of leadership.

2.1.4 Leadership identity development. Women are crucial actors in the societal changes taking place in Saudi Arabia. Because of their profession, women medical educators are part of that transformation, not only as women claiming their individual rights but as inherent leaders within their communities who must take an active role in the betterment of the broader society. The ability to lead others towards transformative goals depends on one's leadership identity, the way one sees oneself as a leader (De Anca, 2012; Lührmann & Eberl, 2007; Metcalfe & Mimouni, 2011; Hogg, 2001; Khurnaa & Snook, 2003; Lord & Brown,

2004; Pittaway, Rivera, & Murphy, 2005; Van Knippenberg et al., 2005), as well as the social roles one assumes and how those are perceived by others (Eagly & Wood, 2011). Therefore, it is important to discuss how these roles and identities develop, and the complex dynamics in-between them.

There are various theories that help scholars understand how identities are developed. Major perspectives can be classified into individual developmental theories and social approaches (Monrouxe & Rees, 2015). Individualist approaches conceptualize identities as personal attributes of individuals and are generally underpinned by objectivist perspectives (Khurana & Snook, 2004; Lord & Brown, 2004). Objectivism centers on the tenet that reality exists independently of consciousness, and that individuals have direct contact with reality through their perception; where objective knowledge can be attained by individuals and is considered a cognitive structure (Rand, 1979). Therefore, identity from the objectivist perspective can be conceptualized as an internal structure (Rees & Monrouxe, 2015). The most prominent individual theory is Erikson's ego psychoanalytic theory (1959), which suggests that individual's ego identities develop over time through eight stages. In his theory, Erikson posits that, throughout life, we face crises that influence how our identities develop. These stages begin with the trust versus mistrust stage at the age of 0-1.5 years where one acquires the virtue of hope and trusting in others, and end beyond the age of 65 with the ego integrity versus despair stage, where an individual acquires the virtue of wisdom.

In contrast, social identity theories focus on the level of the collective rather than the individual (Hogg, 2001), with individual identities tending to reflect the groups to which one belongs. In this view, individuals commonly engage in a process of self-categorization by which they categorize themselves into groups through both a process of social identification with those groups and through comparison to other groups (Tajfel, 1978; Hogg, 2001; Pittaway, Rivera, & Murphy, 2005; Van Knippenberg et al., 2005). Furthermore, individuals engaging in a process of self-motivation, as social beings in search of belonging and meaning we are generally motivated to fit in, that is to identify with a group identity (Rees & Monrouxe, 2015). This provides an individual with a meaningful identity that makes them distinct from others beyond their group.

Theories in this category are underpinned by constructionism, the epistemological stance of this study. Crotty (2003) defines constructionism as: "the view that all knowledge and therefore all meaningful reality as such is contingent upon human practices, being constructed in and out of interaction between human beings and their world and developed and transmitted within an essentially social context" (p. 42). Under constructionism, identity

development can be examined using a discursive approach. Instead of identities being constructed in individual cognition, identities are seen as constructed through talk and interactions. Through the analysis of discourse, researchers can discern what and how identities are produced (Rees & Monrouxe, 2015). While there are several analytical approaches that fall under constructionism with respect to identity development, in alignment with the feminist theoretical underpinnings chosen for this project, I draw on intersectionality to explore the identity development of women leaders.

Intersectionality is both a feminist theory and an analytical approach (Collins, 2000). In the next chapter, I discuss the theoretical principles of intersectionality along with other feminist paradigms; but I wish to point out here that there is only one study in my sample of 46 studies on women's leadership in medical education that explored women's development of leadership identity (i.e., Alwazzan & Rees, 2016). In that study, we used an intersectional lens drawing on the work of Crenshaw (1991) to explore women's leadership and career progression in Saudi medical education (Alwazzan & Rees, 2016). When women spoke about their leadership and careers, they also constructed various personal (e.g. age, gender, culture) and professional (e.g. leader, educationalist) identities. What is more important is the intersection between these roles and identities. Women gave meaning to their role as leaders as well as their enactment of it in a space of competing personal (mother, wife) and professional roles (clinician, teacher, learner, administrator). Social roles entail *appropriate* forms of behaviors that individuals must adhere to in order to be accepted into society (Eagly & Wood, 2016). These roles may result in role strain given the conflicting obligations one may have towards each role (Goode, 1960). Recent work examines the role strain women experience with respect to their family obligations and work (Moazam & Shekhani, 2018; Shaya & Abu Khait, 2017). In the current project, I pay attention to how women may resolve the conflict between not only their personal and professional roles, but the conflict between their professional roles, their leadership role, and their roles as clinicians/faculty.

Women's multiple identities (Saudi, Muslim, Arab, woman) intersect to make matrices that oppress or empower (Hooks, 1984; Crenshaw, 1991; Collins, 2000). Gender alone is not the primary factor that determines women's experience of oppression (Hooks, 1984; Collins & Bilge, 2016; Grzanka, 2018) or empowerment. In this project, I explore further how women construct their identities against the backdrop of society's expectations of all professional women however, I aim to delineate the differences between women's experiences, arguing that these intersections profoundly influence leadership identity formation in a digital context.

2.2 Leadership in a digital context

Given the context the study aims to investigate, it was vital to review literature on the topic of digital leadership. Doing so, allowed me, first, to gain an understanding of how digital tools, platforms, and users are understood in higher education literature. Second, it allowed me to investigate how those understandings influenced the emergence and process of leadership in a digital context. Additionally, based on emerging themes, I developed the questionnaire for phase one of the current study to elicit women's common understandings of leadership in a digital context.

This section provides a narrative literature review (Onweugbuzie & Frels, 2016) to establish a sound foundation for understanding how other scholars have previously conceived digital leadership. To conduct my literature review, I used the terms "leadership" and "digital" to search the Medline and the ERIC database (earliest available date to April 2018). The search returned 94 articles. To be included in the literature review, articles had to satisfy the following inclusion criteria: 1) English; 2) The article must discuss the intersection between leadership and the digital context; 3) Articles beyond the health professions were included. Given the small number of responses, all article types were included: original studies, commentaries, and conceptual papers. Using the above criteria, I conducted a second manual review of the titles and abstracts of those articles and yielded 44 articles to be included in this review.

From the literature, four major themes were identified on the topic of leadership in a digital context including: definitions of digital leadership, digital literacy, digital scholarship, and digital communication. What follows is a critical analysis of work done so far in these domains and how the current research project draws on those works to advance understanding of leadership in a digital context.

2.2.1 Defining digital terms. According to the Oxford dictionary 'digital' is defined as "data expressed as series of the digits 0 and 1" ("digital", 2017). It is an adjective used to describe the use of computer technology. Nowadays, it is added to various existing terms and concepts that have applicability in the digital realm. For purposes of this project and the results of the literature review, specific terms are discussed. Digital is often attached to temporal terms, spatial terms, and added to concepts relevant to the current project and that include communication skills, manifestations of power, the intersection between transformative leadership style and the digital context.

Temporally, digital is attached to era (Tremblay, 2017) or age (Endersby, Phelps, & Jenkins, 2017; Ahlquist, 2017), and it is often mentioned in parallel to the information or computer age (Ahlquist, 2014). Treating digital in temporal terms influences how leadership is understood. On the surface, digital leadership can be understood as the ability to usher an organization into a new era by adopting certain technologies (Tremblay, 2017). This type of definition of digital leadership encourages researchers such as Ahlquist, (2014, 2017) to categorize digital users into "natives" and "immigrants" based on the year they were born, insinuating that the time one was born influences how one navigates the digital realm, and that digital natives are more capable with digital technologies than immigrants, solidifying assumptions informing recent studies and the association between younger generations with digital leadership (Ahlquist 2014; Ahlquist, 2017). Although Prensky's native versus immigrant dichotomy has been discredited by some (Helsper & Eynon, 2009; Bennett, Maton & Kervin, 2008), the notion seems to underpin digital leadership literature in work such as that of Ahlquist (2014; 2017) which focuses on younger generations.

Spatially, digital is referred to as the digital space (Ahlquist, 2014), the digital landscape (Endersby, Phelps, & Jenkins, 2017), digital world (Tremblay, 2017), and online environment (Ahlquist, 2017). It is often conceptualized in opposition to the analogous world, emphasizing certain aspects that are not present in the digital realm. An important difference is that the analogue world is face-to-face versus the digital world which is not and these distinctions influence how leadership is understood (Hoyt & Blascovich, 2003). For example, in the analogue world, a great emphasis is put on the traits one has, and a leader is described as someone who has the ability to communicate in an effective manner (Endersby, Phelps, & Jenkins, 2017). Leaders are often held to a high bar of interpersonal skills and are expected to speak and listen well, and to have body language that is engaged when interacting with their followers (Tremblay, 2017). These leadership communication skills are not easily transferred to the digital space. Leaders who take to the digital realm, must communicate largely in written form or through tele-communication methods (e.g. podcasts and video-conferencing) with followers and much of the need for body language dissipates.

From the above example, I illustrate that the way the digital space is set up leads to a different understanding of what makes a *good* leader. A leader's communication skills in a digital space requires that they have good writing skills, as opposed to good public speaking skills. As a result, in the current study, I was cognizant of these subtle differences and aimed to explore them with my participants.

For this current research project, the term "digital context" was chosen to describe the circumstances where interactions between internet users happen. Unlike the terms *space*, *world*, and *landscape,* 'digital context' moves away from spatial parameters that encourage a reader to separate the analogous real world from the digital world. By choosing the term *context* I focus on the social circumstances surrounding the particular event: women's digital interaction with LAM, putting emphasis on the emergence of a single particular initiative, and, exploring how individuals interact with it.

Leadership in the digital context is referred to as digital leadership (Ahlquist, 2014) virtual leadership (Tremblay, 2017), and online leadership (Hoyt & Blascovich, 2003). Different leadership elements are discussed in the literature including how enacting leadership in a digital context can enable teamwork. Hoyt and Blascovich (2003), in their conceptual paper, developed a framework for team virtual workplaces, arguing that the matter is not binary analogue face-to-face teamwork and use of digital media, rather, there exists a hybrid system, where people meet face to face and still collaborate on digital media. The nature of the team along a virtual-real world continuum, according to the authors, has significant impact on leadership. For example, power on digital media is gained through putting forth opinions, while face-to-face teamwork power is gained through traditional physical signals of power, therefore the expression of power is highly influenced by digital environments. This difference in expression of power might enable certain individuals to become leaders more than others.

Another important sub-theme in definitions of digital leadership is the matching of a leadership style to the digital context and recognizing the intersection between transformative leadership and the digital context. Bass (1990) defines the former: "transformational leadership - occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group" (p. 21). Some scholars believe that out of the many leadership styles, transformational leadership, defined above, is the most suitable style for a digital context (Hoyt & Blascovich, 2003; Tremblay, 2017). From a leadership standpoint, in the digital context there is an emphasis on flat and less hierarchical structures (Hoyt & Blascovich, 2003) and power sharing rather than concentration of power (Tremblay, 2017). In transformational leadership, a leader aims to engage followers, empowering them to take on more responsibilities and to make more decision that benefit the welfare of the group. As a result, a transformational

leader may give some of the power to the followers, making this leadership style perhaps more conducive to a digital context.

  2.2.2 Digital literacy. Digital literacy has been defined as "the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze, and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (Martin, 2005; p.13). Under this theme it is important to discuss a leader's ability to use digital tools. Digital literacy is often spoken about in the context of digital native versus immigrant (Prensky, 2001), such that the competency of the leader is dependent on their age with natives being born into the digital technology era and immigrants being born before it (Ahlquist, 2017). However, some scholars argue that young age is not a prerequisite to digital literacy. Instead, they observe that certain cognitive skills are required for an individual to be competent in the use of digital tools and that an active self-directed learning approach is needed for those who wish to become digitally literate (Eshet-Alkalai, 2004; Hargittai & Walejko, 2008). Tremblay (2017), emphasizes that digital literacy requires individuals to practice and engage more actively on digital platforms, and that this approach increases the digital literacy of an individual and leads to better leadership skills. No substantial evidence exists that proves or disproves Tremblay's argument; however, through this project, I aim to explore with participants their digital media use and development as leaders through a digital platform such as LAM. By doing so, I hope to gain a clearer picture of how digital capabilities develop and their role of improving leadership and influence in digital platforms.

  2.2.3 Digital scholarship. The ability to innovate new ideas and implement new practices is an important part of leadership in a digital context. According to the literature, leaders in a digital context are considered thought leaders (Li et al., 2013), and visionary leaders (Tremblay, 2017). Developing material to be shared online is different from traditional methods of sharing knowledge (Bilda & Demirkan, 2003). First, there are questions about the veracity of digital materials because several mediums are available and virtually anyone can create and disseminate materials. Although this practice can bring a great deal of freedom and create a platform where new potential thought leaders can have significant influence, this freedom also compromises the quality of knowledge provided by different users. Many questions remain as to the most appropriate way digital materials are developed and new practices are implemented. In the evidence-based world of medical practice and education, the quality of knowledge presented is of great importance and may

influence how online users perceive leaders based on the material they choose to share online.

2.2.4 Digital communication. Defined as the ability to participate with members of a digital community such as LAM in a meaningful way. This is a strong theme in the literature (Orlikowski, 1992; Purvanova & Bono, 2009; Yoo & Alavi, 2004). The wide use of social media has created a platform where individuals and groups come together to discuss and collaborate on a variety of projects (Tremblay, 2017; Purvanova & Bono, 2009). For a leader in a digital context, the ability to communicate with others is imperative. Social media platforms have created a more horizontal hierarchy, opposed to traditional organizations which have more vertical hierarchies, requiring a leader in a digital context to be more directly involved with followers. Likewise, followers have more access to their leaders (Endersby, Phelps, & Jenkins, 2017). Leaders in a digital context may be expected to constantly be in touch with their followers; consequently, this creates a major demand on a leader's time. The demand on time may influence how women health professionals use of digital tools.

2.3 Summary

From the literature review on women's leadership, understandings of women's leadership in medical education seem to be narrow. Moreover, there is a lack of exploration of women's leadership in a non-Western context. These lacunae merits the exploration of women's leadership in Saudi medical education in a more comprehensive approach drawing on a worldview that addresses previous works in the field. Furthermore, the majority of studies identify the many barriers women face in medical schools and in their professions. These studies often highlight how, despite the work done so far, many of these barriers have not been surmounted. The current study looks at how women may be bypassing career obstacles which have not been surmounted to find ways to exercise influence. In this project, I'm taking a unique perspective on the issue of women's equality in medical education to see if a breakthrough may be achieved. Finally, from the review I outlined how influence is conceptualized and the extent of women's influence, and how women develop their leadership roles and identities. I found that women have restricted influence and that their leadership roles and identities are far less researched. In this project, I explore the notion of influence and how Saudi women may develop leadership identities in medical education.

Furthermore, from the previous review on major themes of leadership in a digital context, it is apparent that the concept is emergent and in need of further development. Power

and hierarchy take on new shapes in a digital context, a leader is expected to interact more with followers and respond to their needs. A leader in a digital context, is someone who should be digitally literate (Martin, 2005; Ahlquist, 2017), able to innovate new ideas (Li et al., 2013; Tremblay, 2017) and to communicate these ideas to others on digital platforms (Orlikowski, 1992; Purvanova & Bono, 2009; Yoo & Alavi, 2004). These competencies are fairly new for modern day leaders, but fast becoming an integral part of a professional's life. In addition to exploring the leadership of women, I aim to explore Saudi women's leadership in a digital context, where the ideas of innovations and digital literacies are of relevance to women who wish to exercise their influence through a digital platform.

The unconventional approach to leadership I aim to explore in this project requires that I present an overview of theoretical feminist underpinnings that have led me to consider this unexplored area. In the following chapter, I unpack some of the feminist schools of thought that have influenced my thinking and I propose a transformative feminist perspective, which informs my stance as a researcher and orients this study.

Chapter 3: Theoretical and conceptual foundations

As mentioned earlier in this dissertation, to explore Saudi women health professionals' leadership in a digital context, it is important that this research project draws on several theories and concepts. Epistemologically, this research project draws on a constructionist view, in that individuals' construction of meaning is ongoing. Theoretically and conceptually, this research project draws on feminism, leadership in a digital context, the cultural context of Saudi Arabia, and medical education, which are all expansive fields with rich literature and ongoing debates. What follows is not an in-depth exploration of each of these fields. Instead, I show how they intersect within this study and how I have used them to inform the research process.

In the first theoretical section, I begin with the end in mind, introducing my stance as the researcher, a perspective of transformative feminism, making a case of why it is important to postulate a new paradigm of feminism when considering leadership and non-Western contexts. In the second conceptual section, I utilize a common framework to understand complex social phenomena of micro, meso and macro social levels to arrange the conceptual ideas of this research project. Furthermore, to deepen understanding of the cultural influence on women's experiences, I draw on the work of Hofstede cultural dimensions (2001). It is important to note that the conceptual framework put forth in this chapter is the initial framework and how I considered these ideas prior to embarking on the data collection and analysis. Both theory and concepts will be revisited in the discussion chapter. Special attention will be paid to how research findings have changed my understanding of these competing ideas.

3. 1Transformative Feminist Perspective

A clear and agreed upon definition for transformative feminism (TF) is not readily discerned from the literature. Rather, TF seems to be an emerging perspective in need of further consideration (Ferguson, 1984; Chin et al., 2008; Mbilinyi, 2015). The importance of developing a TF perspective for the purposes of the current study stem from the following reasons. First, Western-centric feminist schools including liberal, radical, poststructural, postcolonial, and intersectional overlook the context of Saudi Arabia (Burden-Leahy, 2009), warranting the exploration of their benefit to Saudi women. Second, feminism arrives at leadership indirectly, making understandings of leadership in women's studies somewhat rudimentary; in other words, there is a need for a standalone feminist leadership paradigm (Batliwala, 2011; Eagly & Carli, 2007). Third, a popular leadership model, transformational

leadership, appears to share many principles with feminism (Batliwala & Srilatha, 2014; Chin et al., 2008) and there is potential to exploit this relationship to advance the study and practice of women's leadership in medical education. In the following sections, I will unpack these ideas, concluding with a preliminary understanding of TF, which I have adopted as my stance as a researcher and how it informs the current study.

3.1.1 Western-centric feminist schools, the Saudi Arabian context, and leadership. Existing feminist theories recognize the dominance of men in society and the need for social change (Alexander, 1997; Allan, Iverson, & Ropers-Huilman, 2009; Butler, 2006; Lewis & Mills, 2003; Cala`s & Smircich, 1996). Each feminist paradigm is unique, adding insights that enrich our understanding of women's experiences (Hooks, 2000). Given their Western origins, however, these theoretical perspectives may be of limited use in a context like Saudi Arabia. In what follows, I summarize and critique the 5 major Western feminist paradigms, namely liberal, radical, poststructural, postcolonial and intersectional feminism bearing in mind the Saudi context and illustrating claims with examples from work done on women's leadership in medical education.

Furthermore, feminists have recognized the relationship between feminism and leadership, but leadership never became a significant focus of feminist research (Batliwala & Srilatha, 2014; Watson, 2016). Instead, in feminist circles leadership as concept and practice is largely ancillary to larger discussions on gender equality, power, and alternatives to patriarchal societal and organizational structures and practices. The authors claim that feminists have arrived at their interest in leadership only as result, but not as a precursor to, their struggles for equality. In Table 2, Kark's (2004) interpretation reveals how feminist thinking across the board arrived at questions and conceptualizations of leadership indirectly. In the following sections, I provide a brief discussion of each feminist paradigm. In addition, I have embedded in the following sections, a discussion of how each feminist paradigm has influenced the literature on leadership in organization.

Table 2

Summary of Kark's Conceptual Paper on Women's Leadership

School of thought	Definition	Core tenets	Application to leadership literature	Criticism
Liberal feminism	Rooted in the belief that women and men are autonomous human beings and gender equality can be achieved by working within the existing Western democratic system	Reform Individual choice Equal opportunities and rights Rationality	Aims to determine differences between men and women's leadership style.	Assimilates women into a patriarchal system. Downplays the importance of community.
Radical feminism	Based on the idea that women's oppression originates in institutional structures.	Changing the structure of society Eliminating traditional gender roles.	Emphasizes relational skills and intuitiveness as effective leadership skills.	Limits women's integration into position of power by promoting gender stereotypes
Poststructural feminism	Claims gender is a social construct that is a product of patriarchy.	Gender is fluid, dynamic, contextual and intersecting with other categories	Examines leadership language that privileges masculine attributes.	Emphasis on language is not easily translatable into practical action.

3.1.1.1 Liberal feminism. Liberal feminists subscribe to gender reform theory, asserting that individual differences between men and women are the product of sex-role socialization and not biology. Following this theory, women and men should be considered equal, given their shared humanity (Tong, 2014; Tuana & Tong, 1994; Lorber, 2001). In the late 1800 and early 1900s, American feminists were motivated by the lack of representation of women in the job market and inequitable wages between the sexes (Marilley, 1996; Tong, 2014). The fundamental idea of equal rights, based on the US constitution, drove the movement forward and eventually granted women entry into many job markets including medical education and practice.

This first wave of liberal feminism spanned over 150 years. In her book, Rosemarie Tong (2014) summarizes the progression of this movement: First came the call for equal education in the 18th century, equal liberty in the 19th century, then equal rights in the 20th century. The legal emancipation of women was a result of complex social, economic, and political developments (Butler, 2006). It is important to keep in mind that women faced structural organizational barriers in the West until well after the Second World War even though economic necessity posed by the war effort contributed to women joining the workforce in greater numbers than in the past to replace men who were fighting in the war arenas (Tuana & Tong, 1994).

There are several critiques of liberal feminism. Some argue that liberal feminism encourages women to become like men, neglecting the importance of female roles (Elshtain, 1993). Others argued that liberal feminism favors the rational over the emotional, and that humans need both (Jaggar, 1983). Additionally, liberal feminism has been critiqued for putting too much emphasis on the individual rather than group welfare (Elshtain, 1993). Of importance to the current study is liberal feminism's relationship to democracy, as well as its focus on middle class white western women (Tong, 2014).

With respect to non-Western contexts, a major critique of liberal feminism is its assumption of democracy (Bryson, 1999). The United States, where this movement is seen as first arising, and other Western nations where similar movements arose are governed by democratic political systems. Saudi Arabia, on the other hand, is governed by Sharia Islamic law. In the former, the movement eventually led to women gaining physical access to the public sphere (e.g. medical schools and university campuses). For example, the first women to join a medical program, Elizabeth Blackwell, did so in 1847 (Blackwell, 2017). She marked the beginning of women joining medical education and practice. In Saudi Arabia, on the other hand, gender segregation in medicine and the health professions continues. Saudi

women became part of the public professional sphere (e.g. medical students and faculty at medical schools) out of necessity. That is, it was permissible for women to practice medicine in order to provide medical care for other women in accordance with Islamic teachings. This does not grant them physical, access to some spaces. Instead it created women-only spaces and campuses.

Recent reform discourses encourage the inclusion of women in many occupations, including medical education as illustrated earlier in this dissertation, in the nomination of a female dean for a Saudi medical school. How these reforms will manifest at a meso and micro levels in universities and in medical education more specifically is difficult to predict. In Saudi Arabia, gender segregated learning/work places and gender-integrated workplaces featuring gendered dynamics are a reality. Gender segregation created a need in the majority of medical schools for female-only formal leadership positions, such as a female vice-dean for female student affairs operating from female-only campuses. Female faculty are often given offices in those campuses, away from the administration of the medical college which is putatively a gender-integrated environment. These conditions deterred women from becoming vice-deans and heads of department in the medical college because of the physical boundaries (Jamjoom & Kelly, 2013).

On a micro individual level, Saudi women are practicing Muslims, which means, for example, that some adhere to a modest dress code in the presence of unfamiliar men. For such women, segregated workplaces offer the freedom of not having to wear head scarfs and other religious attire, but this freedom serves as a barrier to their participation in gender-integrated environments such as the medical college. Religious practices such as this one are individual rights that Sharia Islamic law prescribes and protects. At a meso and micro level, liberal feminism does not help women overcome these unique contextual career and leadership barriers (Ahmed-Ghosh, 2008).

3.1.1.1.1 Liberal feminism and leadership. Influenced by liberal feminism, initial studies on women's leadership was concerned with *access* to positions of authority. However, such studies do not address how women obtain positions of authority or how they enact leadership roles once they are in them (Alevesson & Billing, 1997). It is at this juncture that the organizational literature, influenced by the political changes liberal feminists were able to introduce in organizations, takes up questions about women-as-leaders. In this area, the literature concerns itself with questions such as: now that women have gained access to leadership positions, how can they do these jobs? At this point, a contradiction begins to appear in liberal feminist approaches. On the one hand, liberal feminists argued for equality

on the basis of negating the supposed differences between women and men, to argue for their equal share of career and leadership opportunities. On the other hand, once women began to gain access to leadership positions, organizational scholars with a feminist stance set about figuring out how women's leadership was different and could make unique organizational contributions as a result (Helgesen, 1995).

According to organizational studies motivated by liberal feminism, preparing women for leadership requires teaching them certain skills that help them compete in the professional world. As a result of this thinking, organizational studies largely focus on gender differences when examining leadership concepts such as power and influence (Goethals & Hoyt, 2017; Eagly & Carli, 2007; Bass, 1990; Dobbins & Platz, 1986; Eagly & Johnson, 1990). These studies asked questions such as: What leadership style suits women? How is their leadership different from those of men? Although studies in this area are popular, they are inconclusive (Bass, 1990; Dobbins & Platz, 1986; Eagly & Johnson, 1990). In general, it seems that liberal feminists have left women's leadership to the leadership experts and have not examined it as a core part of the feminism literature (Kark, 2004).

On leadership and beyond, some feminists in the West have come to the conclusion that it is not helpful to conceptualize feminism as a need to continuously compare women to men. These scholars have argued there is a need for women scholarship and spaces away from men where women can produce such scholarship in a movement known as Radical Feminism, which I discuss next.

3.1.1.2 Radical feminism. In the 1960s a second wave of feminism began in the US and quickly spread to the Western world (Tong, 2014). Beyond what was achieved in the first wave of feminism (e.g. the legal emancipation of women) this second movement was concerned with wider issue such as women's dominion over themselves in their working and domestic environments (Hirsch & Keller, 1990; Hole & Levine, 1971; Hansen, 1989). Second wave feminism was concerned with consciousness-raising and awareness to issues such as workplace sexism and domestic violence (Jaggar & Rothenberg, 1984). Unlike liberal feminists of the first wave, radical feminists of the second wave did not see themselves as reformers work within the existing social, economic and political systems; rather, they tended to see themselves as revolutionaries (Hole & Levine, 1971; Jaggar & Rothenberg, 1973).

The resulting paradigm, radical feminism became the call for the creation and protection of non-hierarchical, supportive spaces for women, for example, calling for women-only healthcare facilities (Lorber, 2001). As the name suggests, *radical* calls for systemic change by encouraging women to find sisterhood and to create their own spaces.

The idea is that women-only spaces give women the freedom to create and produce knowledge away from men (Hirsch & Keller, 1990; Willis, 1984).

Radical feminists agreed that sexism was a sinister form of oppression. However, two diverging points of view emerged with the second wave of feminism. On the one hand, radical-libertarian feminists explored feminine gender identity and how it limited women's self-determination. Based on this viewpoint, radical-libertarian feminists encouraged women to draw on both feminine and masculine characteristics to succeed in the workplace (Tong, 2014). As a reaction to this viewpoint, radical-cultural feminists emphasized the need to affirm women's essential *femaleness*. The latter encouraged values and virtues associated with women culturally (e.g. community, sharing). Despite their diverging views, through both radical-libertarian and radical-cultural feminists, the feminist discourse matured towards acknowledging that women had multiple identities and roles, gender and otherwise, that influenced their experiences (Jaggar, 1983).

Radical feminism has been criticized for its assumption that all women are Western, white and belong to the middle-class and that women who are not white and middle class benefit little from the ideas of radical feminism (Willis, 1984). Using intersectionality theory, we can appreciate that women's many identities intersect to create a mesh of oppressions. For example, faculty who are women of color in medical education suffer worse career hurdles than do women who are white (Pololi et al., 2012). At a micro level, this critique can be appreciated in a Saudi context. Saudi women's experience of gender is further complicated by religious and cultural identities. Saudi women doctors may be deterred from certain specialties because of the cultural expectations. Similar to Muslim women elsewhere (Moazam & Shekhani, 2018), women in Saudi Arabia may face cultural expectations to marry and start a family early in life an expectation that is perceived by society to be at odds with the practice of medicine. Radical feminism in this respect, does not help women navigate the complexity of intersecting identities.

3.1.1.2.1 Radical feminism and leadership. In terms of leadership, while organizational literature motivated by liberal feminist views tries to make women more like men to succeed, focusing on the individual, radical feminism addresses systems that encourage perceived workplace values like objectivity and competitiveness (Kark, 2004). When applied to leadership, feminist resistance perspectives led to work that examined women's intuition and relational skills (Bass, Avolio, & Atwater, 1996; Druskat, 1994). Work influenced by radical feminist thinking, turned to qualitative methods to explore how women's innate abilities can be cultivated to enhance organizations (Alvesson & Billing,

1997). The issue here is that such skills are important for leaders, especially, under participatory and transformative leadership styles. However, in hierarchical systems such as medical schools, these skills may stereotypically nominate women for educational positions such as course coordinators and not for the more prestigious leadership positions such as dean and vice-dean (Baecher-Lind, 2013).

Although both liberal and radical feminism give us much to consider for women and their leadership, the feminist discourse influenced by critical theory and poststructural theory became more critical of power structures and authority.

3.1.1.3 Poststructural feminism. A third-wave of feminism gained momentum in the 1990s (Evans, 2015). This wave of feminism included poststructural feminism and intersectionality. The former was concerned with the social construction of gender and how existing power structures maintain the status quo (McLaren, 2002). As a branch of poststructural thought, poststructural feminism emphasizes gendered language and linguistic analysis, seeking to explore relationships between language, power and gender. For poststructural feminists, it is important to reject absolute truths, question scientific standards, and challenge power discourses (Tong, 2014). Meaning is not arbitrary or absolute; rather, it is dynamic and constantly negotiated (Butler, 2006). Poststructural feminists consider the universalization of knowledge as an instrument of oppression (Evans, 2015; McLaren, 2002; Tong, 2014; Butler, 2006). An example of this is the 'standard male' in medical literature, presented as neutral and established as the standard, even for women (Butler, 2006).

An argument against poststructural feminism is that it lacks practicality (Alvesson & Billing, 1997). It has been criticized for offering a perspective at the level of linguistic analysis that is difficult to interpret and connect to analyses at meso and micro levels (Friedman, 1991). A second critique of poststructural feminism is that it pertains mainly to discourses that are English and Western (Braidotti, 2010). In contrast, Saudi Arabia has an Arab population and its main language is Arabic. These major differences merit the exploration of how poststructural thought and tools can be used to deepen our understanding of the Saudi cultural and linguistic context.

Despite the critique of poststructuralism, medical education can benefit a great deal from this paradigm. An example of how poststructural feminist principles can be used exists in the work of Marchant and colleagues (2007) who explored the language of tenure policies and found that medical schools with the word "leader" in their policies were less likely to promote women. The authors argue that the terminology of "leader" triggers biases and stereotyping of leadership as being an attribute of men; and as a result, women do not

advance in their careers. From Marchant et al's (2007) work, the benefit of poststructural feminism can be seen, and subsequent practical approaches and women empowerment measures can be better developed.

3.1.1.3.1 Poststructural feminism and leadership. Liberal and radical feminist work focuses on the performance of leadership either by encouraging women to become more like men or drawing on their innate abilities such as being communal and caring to become better leaders. Work drawing on poststructural feminist thought moves away from liberal and radical ways, providing a wider perspective of the social forces that influence women's enactment of leadership and how it is perceived by others. Poststructural thinking enables us to think beyond the single leader and to conceptualize leadership as a process that different actors engage in within organizations. Therefore, leadership is fluid and constantly negotiated based on the interest of the group (Ford, 2002).

With respect to gender, work based on poststructural thought draws attention to how women are positioned as outsiders of the organization because of the dominant masculine leadership discourse (Gherardi, 1995). A considerable number of studies exists that shows the effort women have to invest in public image to be deemed acceptable in organizations (Fournier & Keleman, 2001; Brewis, 1999; Gheradi, 1995). On the other hand, other studies show how women may downplay their gender identity in order to fit in the male environment (Collinson & Hearn, 1996; Marshall, 1995; Calas & Smircich, 1996; Fletcher, 2004).

3.1.1.4 Intersectionality. Part of the third wave of feminism was the work of Crenshaw (1991) and Collins (2000) on intersectionality. As a theory, intersectionality posits that individuals' experiences of oppression are not based solely on their gender. Instead, women's experiences of oppression lay at the intersections of their multiple identities. Intersectionality is partially a reaction to mainstream feminism which, according to intersectional feminists, subsumes women under a non-white, non-Western category otherwise known as multiculturalism (Tong, 2014). This categorization ignores the individual and unique experiences women have. Spelman (1998), for example, points out that mainstream feminists, particularly liberal feminists, fail to capture the oppression that women of color face as a result of their gender and race.

While intersectionality expands feminist understanding, it is challenged by 2 critiques that are relevant to this dissertation. First, intersectionality calls for acknowledging the differences in women's experiences which may lead to creating categories and sub-categories. Such that intersectionality becomes less paradigmatic and more a description of individual experiences (Tong, 2014). Since the inception of intersectionality, many categories

have surfaced including nationality, religion, professional identities. Second, Intersectionality pays considerable attention to oppression at the individual level and neglects the oppression of groups, covering only a fraction of the system. Colonialism, for example, oppresses groups of people in different ways and the oppression does not target individuals. It is therefore, difficult to explain the oppression from an individual perspective. In a following section, I go on to discuss the postcolonial feminist perspective which takes up the viewpoint of group oppression. But first, I summarize how intersectionality may be useful in understanding leadership experience.

　　　3.1.1.4.1 Intersectionality and leadership. With respect to leadership, there is a paucity of literature on the influence of women's multiple identities (Jones, 2016). Although diversity in leadership is needed, it seems that women are *double outsiders*, because of their gender as well as other social categories (Sanches-Hucles & Davis, 2010). From an intersectional perspective, women's experiences are more nuanced than just being outsiders. For example, women are often victims of *silencing*. Because of their ethnicity or religion, they may have less access to resources necessary for leadership, such as sponsorship and mentorship, and as a result have less of a voice in organizations (Jones, Kim, & Skendall, 2012). However, at the same time, because of affirmative action, women may be sought for leadership because of their gender as a result of another process called *tokenism* (Oakley, 2000). Women's visibility might be heightened and the expectation for them to perform as leaders might be judged, not on how they perform as leaders, but on how well they speak for their gender, ethnicity, or religious group. As a result, women leaders may take part in a constant negotiating between their multiple identities.

　　　3.1.1.5 Postcolonial feminism. In colonized or formerly colonized nations, the economic exploitation of women brings a unique perspective that is not to be homogenized with the experiences of women in Western worlds (Mohanty, 1988). For example, women who work in developing countries such as Central and Latin America earn profoundly less than men, creating the need to subsidize their earning with growing food at home. The gendered division of labor in postcolonial countries is the result of a long history with colonialism, where women's contributions to the economy were undermined and exportable goods were favored (Mohanty, 1991). Furthermore, female workers were recruited to do manual labor, but were paid very little themselves. Consequently, the experiences of postcolonial women were one of survival.

In the West, feminists are concerned with the gender pay gap and unpaid domestic labor (Tong, 2014). These gender equality issues are important but are context-specific and not universal (Mohanty, 1984). Postcolonial feminism raises our awareness that Euro-American ideals may not always have applicability in women empowerment elsewhere. Instead, feminism should be rooted in social, political, and historical contexts of a given country or region (Spivak, 1985). In this respect, postcolonial feminism may be complementary to intersectionality, in that the experiences of women are multitude (Kerner, 2016).

The postcolonial experience described in the literature by prominent authors (Spivak, 1985; Mohanaty, 1984; Mohanaty, 1990) is, however, not that of Saudi women's experience because the Arabian Peninsula, modern day Saudi Arabia, was not colonized in the same way. Postcolonial feminist work brought attention not only to how Western ideals may be imposed but also how White feminists may feel towards women in non-Western contexts in what has been referred to as "white savior complex," a way of rationalizing colonization of Eastern lands (Cole, 2012). This can manifest as the feeling of responsibility westerners feel to educate others in non-Western contexts (Aronson, 2017). Because it is coupled with the colonization of land, the idea of bringing education to others in colonized nations is quickly recognized as a part of subjugation.

There is a more nuanced manifestation of educating the *other* in Saudi medical education. Given the historical development of medical education, medical curricula are taught in English and are based on Western secular values. As a part of that, Saudi women may benefit from a form of feminism that takes into account the marginalization of Arabic in medical education and knowledge that emerges from within Arabic cultures and traditions. Because language and the production of knowledge is closely related to identity, the marginality of the Arabic language may result in overlooking indigenous knowledge about women's experience, known only to the women.

3.1.1.5.1 Postcolonial feminism and leadership. Leadership literature drawing on postcolonial frameworks are concerned with, first, asserting that the experiences of women of color and immigrant women are distinct from the experiences of white women (Asher, 2010). Second, it is concerned with how non-white or non-western women navigate and negotiate their leadership in organizations (Asher, 2010; Blackmore, 2010). Here, structural factors such as an organization's mission, culture and resources contribute to the institutional experiences of women. Work drawing on the postcolonial paradigm moved the conversation

away from the dichotomy liberal and radical feminism was centered around – men versus women leaders – and brought focus on structures and the intersections that make up women's experience (Kerner, 2017). Such work is mainly conducted in Western contexts and is concerned with minority experience. It is difficult to see how such a framework may be beneficial in a Saudi context, where the plight of women leaders is not one of minority status.

Postcolonial feminism and the previously discussed feminist schools contribute a great deal to our thinking on gender equality. As mentioned in the beginning of this chapter, gender equality is what gave rise to these feminist paradigms. But these paradigms have come to leadership only as an afterthought or one of the many ways women's issues can be solved. Despite the importance of leadership in invoking change, the intersection between feminism and leadership are far less researched (Batliwala, 2011). Moreover, in what has been recognized as a fourth wave of feminism, the idea of equality for all, heavily influenced by intersectional thinking, is currently taking shape (Chamberlain, 2017). Scholars in this movement call for greater representation of women in job sectors and in leadership positions (Aune & Dean, 2015; Evans, 2015; Cochrane, 2014; Munro, 2013; Wrye, 2009). What makes this fourth wave different from previous ones, is its emphasis on cultural and historical contexts, as well as the utility of modern technologies in further enabling the advancement of women and women's interests (Munro, 2013).

As part of this thinking, in the following section, I discuss the intersection between feminism as a whole and a particular form of leadership that is often viewed as a leadership style appropriate for the digital context (i.e., transformational leadership).

3.1.2 Feminism and transformational leadership. In the leadership literature, a strong connection is made between transformational leadership and feminism at large. Transformational leadership is defined by Burns (1978) as a style of leadership "where one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality" (p. 384). Burns (1978) further developed the concept of transformational leadership stating "…Their [leaders and followers] purposes which might have started out as separate but related...become fused. Power bases are linked not as counterweights but as mutual support for common purposes...transforming leadership ultimately becomes moral in that it raises the level of human conduct and ethical aspiration of both leader and led, and thus it has a transforming effect on both" (p. 384). Transformational leadership shares with feminism the notion of collective work for collective benefit (Barker, 1994). In other words, leaders collaborate directly with followers to develop and achieve

collective objectives, giving followers more control over their own work and contributions to collective goals, and using substantive interpersonal communication and relationships to drive collective efforts. The overlap between ideas at the heart of transformational leadership and feminism have inspired a conceptualization of a transformative feminist leadership perspective, my stance as a researcher, discussed in the next section.

3.1.3 Transformative feminist leadership perspective. In the last 3 decades, the notion of transformation has gained popularity among scholars in multiple fields, who draw on it to explain new ideas such as transformative change (Lichtenstein, 2000), transformative learning (Mezirow, 1991), transformative leadership (Astin & Astin, 2001), transformative knowledge (Vargas, 1987), and transformative feminism (Mbilinyi, 2015). These concepts provide insights that focus on positive change through substantive ethical and interpersonal commitments that aim to alter broader organizational or social structures to providing for more individual agency, autonomy, personal growth and freedom for actors in organizations (Shields, 2010). In this dissertation, I draw on the transformative feminist perspective and propose that such a perspective emphasizes a focus on how Saudi women health professionals develop as leaders, the meaning they associate with their leadership, and the potential they have to transcend the status quo in medical education to spearhead positive organizational changes for other women. Motivated by this perspective, I recognize that each woman is more than just a member of the medical school and has other intersecting identities (e.g. religious, family, social), and that women transformative leaders can mobilize other women in a holistic manner and in alignment with the organization's interests (Mbilinyi, 2015).

Drawing on Mbilinyi, (2015) and Mertens's work (2008) on transformative feminism and transformative participatory action research approaches targeting less privileged groups, I unpack in the next sub-sections major transformative feminist leadership principles that orient the current research project, including: 1) For knowledge to be truly effective it must be contextual; 2) Leadership developed from a feminist perspective can transform organizations because it acknowledges the individual, the collective, and the alignment between them; 3) Transformation requires innovative and sustainable development.

3.1.3.1 Contextualized knowledge. A transformative feminist (TF) perspective does not impose a way of thinking on people. Instead, TF asks individuals to take an active role in their own development and the development of their surroundings (Batliwala, 2011). For example, in the LAM initiative, women are asked to write about how they develop as health professionals and about their learning, reflecting on their own experiences as learners and

educators in a Saudi context. Women are encouraged to consider not only the changes that occurred in recent years, but also to foresee possible changes in the near future. There is potential for women health professionals in becoming a big part of medical education leadership; this requires these women leaders to consider how their context is different and what needs to be done in order to contextualize knowledge. A formidable way of contextualizing knowledge, especially for women who are already faculty members, is through research and scholarship. Taking this avenue, women faculty should explore issues of medical education in manners that are contextualized by the use of Arabic language and Islamic ways of knowing in medical education and practice.

With respect to women's leadership, the use of Arabic language and Islamic ways of knowing have some implications. First, they may aid in addressing barriers to women's leadership, which are highly influenced by a mixture of cultural and religious beliefs. It is therefore important to explicate the two and explore the nature of those beliefs. Doing so will possibly stimulate a philosophical discourse on the role of women in leadership. Prior to an intellectual discourse on women's leadership, an exploration of the Arabic language may be of great benefit. Because to gain access to Islamic ways of knowing, which are in major Arabic religious texts, an understanding of the Arabic language may be necessary.

Second, language is the common expression of identity and culture. It provides linguistic categories that aid in formulating ideas and then communicating them to others. To study how identities develop, some have argued that everyday communicative discourse holds the key (Monrouxe & Rees, 2015). How women develop leadership identities, an objective of this study, can be explored through the way they speak. Language may expose aspects of leadership identity development not yet known.

3.1.3.2 A transformative feminist leadership: the individual, the collective. Opposite liberal and radical perspectives, where Western white women of a middle class are central, a transformative perspective acknowledges the multitude of experiences different women have, making a TF paradigm more inclusive (Batliwala, 2011). Contemporary thoughts on fourth wave feminism encourage the notion of inclusivity (Munro, 2013). The challenge of inclusivity is two dimensional. On the one hand, even within a transformative perspective, different types of feminism must exist to account for different social and cultural contexts. In a TF perspective women are encouraged to examine context and to develop in reaction to their unique needs, and to be careful of implementing gender equality solutions developed elsewhere (Mbilinyi, 2015; Mertens, 2008). These steps may lead to the development of context-specific paradigms.

The second dimension is how does TF translate into policies and laws? In increasingly heterogeneous multicultural societies, how can individual values and needs be aligned with collective values and needs? In a context like Saudi Arabia, which is becoming more and more multicultural, it is not only the needs of Saudi Arabian women that need to be considered and addressed in TF, but also women of different nationalities that have become a part of the fabric of medical education and medical practice (Alwazzan & Rees, 2016).

3.1.3.3 Promoting innovation and sustainable development through women leaders. There is a danger that women's leadership in academic medicine is reacting to the existing organizational culture in Saudi medical education and is finding ways to exist within that culture rather than contributing new ideas and taking action to change it for the betterment of women. Women leaders are conditioned to think of their leadership as an individual accomplishment and a career milestone. The few women that reach leadership positions reinforce the culture by acting in ways that are conducive to it (Pololi & Jones, 2010). A TF perspective encourages a reconceptualization of women's leadership as an intrinsic element to positive societal change (Batliwala, 2011). Shifting towards this idea, requires posing new questions: What challenges in medical education as a whole require innovative ideas that women leaders are in a better position to provide? An answer to this question requires further exploration, and is perhaps beyond the scope of this study. However, in this study I begin a query into how innovative digital tools, for example, can be utilized to help women realize more influence and leadership in medical education, consequently, helping women leader engage in more innovative leadership approaches.

3.1.3.4 Potential challenges of a transformative feminist perspective. A purpose of this study is to draw on TF, a stance I'm taking as the researcher for women's leadership in medical education literature, that may influence how research on women's leadership in medical education is conducted globally and not just Saudi Arabia.

The claim is to achieve gender equality, institutions structured and governed through traditional means, such as mandatory gender-segregated universities and medical schools that feature systemic barriers to women's participation in leadership roles, must undergo a process of transformation rather than mere accommodation. It is not sufficient to make "female-friendly environments" because doing so reinforces the notion that women are outsiders to medical education. An example of TF perspectives informing women's leadership is the Feminist Transformative Leadership Development at the University of Calgary for women faculty (Kearns, 2008). While this initiative remains within an established organization, it adopts a transformative approach, encouraging women leaders to solve issues and engage in

organizational evolution. Through peer workshops, the women's resource center, helps women faculty brainstorm for new ways to engage as leaders.

The challenge that a scholar must bear in mind when drawing on a TF perspective is feminist TF perspective is relatively new and is not well developed (Mbilinyi, 2015). Furthermore, it is not yet clear how TF principles can be put into practical terms; for example, what does the process of transformation entail, and how can women go about engaging in such a process, whether individually or collectively?

3.2 Conceptual framework

This research project lies at the intersection of several concepts as illustrated in Figure 1 below. It is important to recognize that it is not that intention of this project to prioritize one concept over another or expand on any one concept. Rather what matters is how these concepts intersect in a way that answers the research questions.
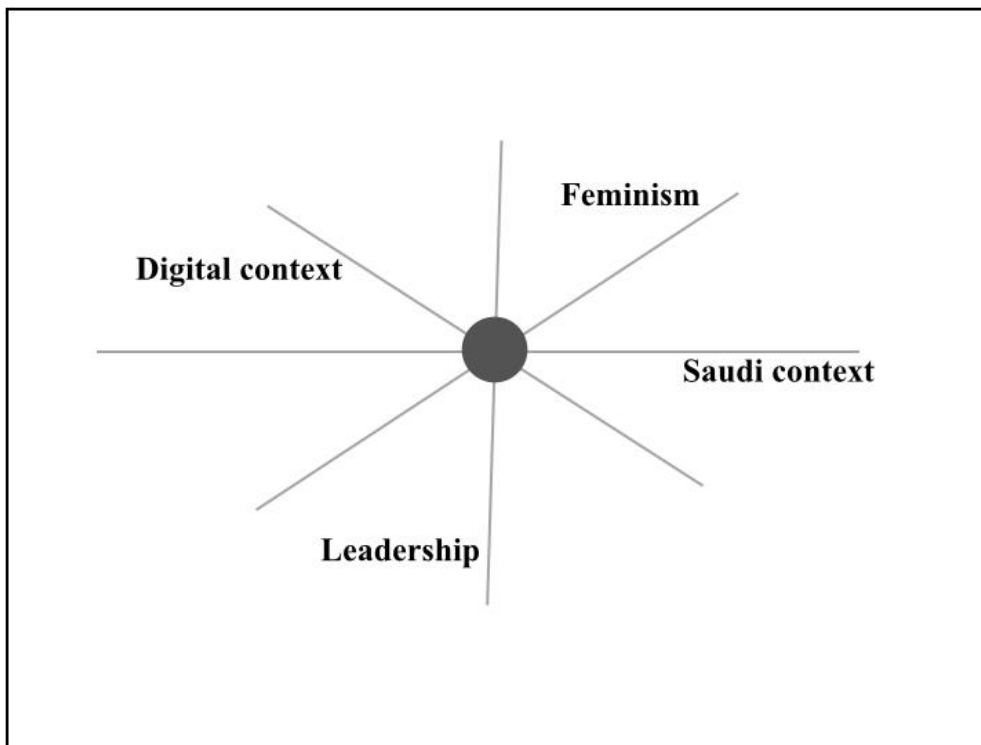
Figure 1 Concepts informing the present study

As discussed in the previous chapters, I've adopted constructionism as the epistemological stance of this study, that is how participants of this study come to construct meaning depends on their interactions with one another and with the environment around them. In alignment with this epistemological orientation, conceptually, I found it useful to organize this project using a common social science framework incorporating macro, meso and micro levels (Kuhn, 2012). Thus acknowledging the social interactions a participant may

have with others through the meso level and with the environment through the Macro level. Furthermore, my understandings of such social interactions and how participant make sense of them can be advanced through the use of a cultural framework, namely, a well-known cultural framework – i.e., Hofstede's cultural dimensions (2003) which I describe in the next section.

As Pope (2006) explained: "To understand the pace, direction and impact of organizational innovation and change we need to study the interconnections between meanings across different organizational levels" (p.59). The macro level is the Saudi Arabian cultural context. Although the proposed study does not examine large scale social processes, for example how the professional role of women is developing in Saudi society. The focus of the study is part of this far reaching professional/social change. The changing professional landscape for Saudi women affects the need for leadership in a digital context. To meet international gender equality standards and to meet global economic demands, more and more job sectors and leadership positions are becoming available to women (Ministry of Foreign Affairs, 2017).

At the meso level, experiences of groups and their interactions are examined (Johnson, 2008). In this study, the context of medical education, more specifically the LAM initiative is identified as the meso level. To better understand leadership in a digital context and its potential role in women empowerment, it is important to explore how women followers of LAM perceive their influence as members of this digital community and the influence of group dynamics on their leadership identities. Furthermore, the meso level may include the broader professional circles to which women participants in the present study belong.

The micro level, which is where the study's primary focus lies, is the individual understandings and experiences of women with leadership in a digital context. Digital leadership as previously discussed is an underdeveloped concept in medical education Therefore, at the individual level, we can begin to examine leadership in a digital context, specifically as a potential enabler of women's leadership in medical education. It is the aim of this study to explore common understandings Saudi women health professionals hold about their leadership in a digital context specifically the values and beliefs that inform their understanding. In figure 2, I illustrate the major concepts orienting this project, aware from the outset that my understandings of these sensitizing concepts would develop as a result of my experience conducting the study and of my interactions with participants and the data they would provide.

Transformative Feminism

Micro/individual level — Women

Meso/Professional level — Medical Education

Leadership in Digital context

Macro/Cultural level — Saudi Arabia
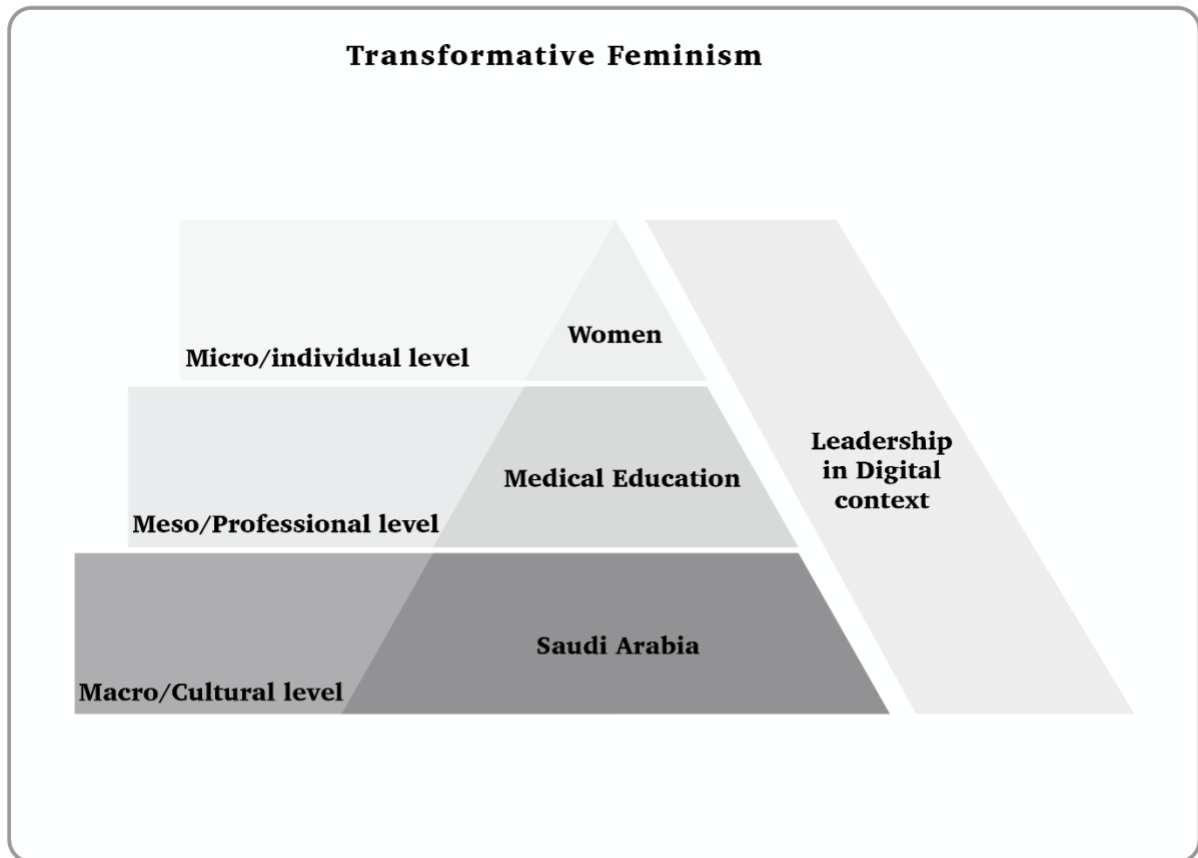
Figure 2 Conceptual framework

3.2.1 Hofstede's cultural dimensions framework. Dutch psychologist Gerard Hofstede proposed a framework for cross-cultural communication that offers insights into the influence of a society's overarching culture on the values and beliefs of its members in an organizational setting (Hofstede, 2003). Hofstede's framework can be used to identify important differences between sociocultural contexts. Much of the women's leadership literature reviewed in chapter 2 is based on Western experience, and may not fully reflect the experiences of women leaders in a Saudi Arabian context. Beyond collecting data in the Saudi context, I grounded the research findings in their cultural context using Hofstede's theory, contrasting women's understandings and experiences of leadership, and highlighting possible differences and similarities between the Western culture and the Saudi culture.

Hofstede proposed six dimensions by which researchers can better understand how sociocultural contexts affect the values and beliefs of research participants. The framework is meant to sensitize researchers to cultural differences that need to be taken into account in the design and conduct of research. These dimensions include: 1) Power distance; 2) Individualism versus collectivism; 3) Masculinity versus femininity; 4) Uncertainty

avoidance; 5) Indulgence versus restrain; 6) Pragmatic versus normative. In the following section, I explain these dimensions with respect to Saudi women's leadership in a digital context, the topic of this dissertation. I excluded the latter two dimensions because they seemed irrelevant to the purpose of this study. Indulgence versus restrain deals with gratification and enjoyment of life versus showing more restraint. Pragmatic versus normative index deals with a society's long term orientation, that is being pragmatic, modest and thrifty. Both indices, although very beneficial when exploring culture, don't have applicability in this dissertation which does not examine women's enjoyment or their long versus short term orientation.

3.2.1.1 Power distance. The power distance index can be defined as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede et al., 2010, p.61). This index suggests that inequality in a given society is endorsed by followers and leaders alike. Countries that score low in this index are the US, Canada, and the UK. In these countries power between leaders and followers is far less extreme and followers are less dependent on the leader. At this end of the spectrum, there is a preference for consultation and cooperation. In countries with a high score, like Saudi Arabia, the power is distributed more unequally, with followers expecting to be told what to do. The influence of the digital context on the leadership process in a Saudi context might be expected to remove some of the barriers that exist in real-world organizations. As a result, digital leadership initiatives may lower the power distance. Followers on social media may take on a more interactive role.

3.2.1.2 Individualism versus collectivism. In this dimension, there is focus on the relationship between the individual and the group. In this index, societies are either labeled 'individualistic' or 'collectivist'. Members of individualistic societies are expected to look after themselves. Members of collective societies are expected to look after the group. The US, Canada, and the UK are considered individualist societies, while Saudi Arabia is considered a collectivist society. In collectivist societies, there is an emphasis on maintaining harmony over speaking one's mind. In individualistic cultures, accomplishments and productivity are emphasized. The time and effort a leader spends building relationships is often compromised in individualist societies to get the job done. In other words, the task prevails over cultivating personal relationships.

With respect to leadership in a digital context, social media may exacerbate the need to maintain social relationship over accomplishing tasks, especially in open-platforms where women leaders are more likely to be judged by others because social interactions are

conducted openly. However, social media encourages individuals to assert their personal features and speak their own mind by sharing their own material and opinions. Moreover, social media often focusses on conveying one's status. This can be in the form of professional identities, accomplishments, and successes on the social media bio section. Saudi women leaders in a digital context may be encouraged to assert themselves more. The digital context may provide a space for women to bypass social protocols prevalent in organizational settings which dictate modesty in speaking about one's self.

   3.2.1.3 Masculinity versus femininity According to Hofstede (2010) cultures with clearly distinct gender roles are generally considered masculine. Feminine cultures are those with blurred boundaries with respect to gender. Moreover, masculine cultures value assertiveness and focus on success. Feminine cultures, on the other hand, value modesty and quality of life. With respect to the digital context, in feminine cultures it may be more acceptable to engage in online networks while at work. Masculine cultures may have a stricter task orientation engagement (Hall, 1976). In such cultures, online tools may be frowned upon, as they may deter an organization's members from their work (Hofstede, 2001). This dimension may help us understand the extent to which women may choose to engage on online platform.

   3.2.1.4 Uncertainty avoidance. Hofstede (2010) defines this dimension as: "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (p.13). Saudi Arabia scores highly in this dimension, people of this society may be intolerant of uncertainty and as a result may commit to a rigid code of beliefs and behaviours. Innovative, 'out of the box' thinking and ideas may be challenging. The need for predictability may deter women health professionals from using digital tools, because it requires experimentation and adoption of new methods of leading.

3.3 Research questions guiding the study

   The three research questions guiding the study are based on the problem statement (see Chapter 1, Section 1.1), on the existing knowledge base and knowledge gaps in relevant bodies of scholarship (as pointed out in the literature review in Chapter 2), and on the epistemological constructionist perspective, transformative feminist stance, and conceptual framework introduced in the current chapter. These questions are:

1. What common understandings do Saudi women health professionals have about their leadership in a digital context?

2. Why have women turned to LAM to exercise influence in their profession?

3. How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession?

In the next chapter I describe the mixed-methods research design and methodology used to answer each of these questions.

Chapter 4: Method

To answer the tiered research questions, I adopted a mixed method design, specifically, Creswell's (2003) explanatory sequential approach. The process included two phases of data collection. Beginning with the quantitative phase, I used a web-based questionnaire to answer the first research question, attempting to solicit common understandings of leadership in a digital context among Saudi women health professionals. Next, building on findings from the first phase, I conducted a second phase using semi-structured interviews with a select group of participants to explore key findings from the survey in more depth, and to answer the second and third research questions about influence and leadership perceptions. In what follows, I first explain why I used a mixed-method design. Then I describe the processes of phases one and two. For each phase, I describe the data collection instrument and how I developed it, the participants and selection criteria, and the data analysis procedure (See appendix G for workflow).

4.1 Rationale for using a sequential explanatory mixed-method approach

The reasoning behind using a mixed method design has to do with the way the current research project developed. Women who follow the LAM initiative seemed particularly interested in its growth and in becoming part of its development. This initial observation led me to wonder if the women's interest stemmed from a need to exercise influence in their professions and, if so, why? In addition, the digital context is often presented as being somehow separate from the "bricks-and-mortar" world of organizational life in medical education; but in reality, this is not the case. Rather, the online and bricks-and-mortar worlds often interact (Endersby, Phelps, & Jenkins, 2017). Thus, I began to think about how women's online interactions with LAM may impact their leadership activities and identities in their workplaces and broader profession. This led to asking how their participation in digital communities such as LAM influence the development of their leadership identities. Women who participate in LAM have different backgrounds and different experiences of leadership, gender dynamics in their professions, and in the use of digital tools. How women consider influence and leadership in a digital context is not yet known. Thus, the research questions I derived to guide this study required ample room for a variety of opinions and multiple realities to exist. *Why* and *how* queries are best explored through a qualitative approach (Denzin & Lincoln, 2011).

The aforementioned questions, which became my second and third questions for the study, were based on my experience as the developer and moderator of LAM, and from my

reading of the literature on digital leadership and feminism. While I felt my anecdotal observations held merit, the two questions I decided to ask at that point were insufficient and would not properly explore the topic. To some extent, the two questions imposed my assumptions and understandings of influence and leadership on my participants. Indeed, women who I considered to be an active part of the LAM community may not have recognized their contributions in the LAM community as being influential or as being an exercise of leadership that could be further cultivated to empower women in medical education and the health professions. I therefore thought it was essential to work with the women in the LAM community to help define how they understood leadership in a digital context. This need for an agreed upon definition of leadership in a digital context led to the development of the first research question: What are common understandings women health professionals hold about their leadership in a digital context? An answer to this *what* question would provide a basis for asking the qualitative *why* and *how* questions. My solicitation of common understandings of leadership in a digital context lent itself to a quantitative approach; therefore, a questionnaire was developed and used in a survey of women participants in the LAM community was conducted to answer this first question.

Greene et al. (1989), outlines five different purposes for adopting mixed-method design: triangulation, complementarity, development, initiation, or expansion. In this study, the purposes of using a mixed method approach are development and expansion. In terms of development, results from the one method (i.e., a survey) can inform the design of the other method (i.e., interview study) (Sieber, 1973; Madey, 1982). In the current study, based on results from the first phase, a more focused list of inclusion criteria for participants of the second phase was developed along with an interview guide.

In terms of expansion, different ways of inquiring (quantitative and qualitative) result in more comprehensive results, thus expanding the scope of the study (Caracelli & Greene, 1993). Initially, I set out to understand women's reasons for wanting to have influence through their participation in LAM, but employing a mixed method approach that addresses two additional questions has extended the study well beyond this initial goal. In addition to women's experiences of leadership in an online community, the two phases allowed me to study the phenomenon of leadership outside of the establishment (e.g. medical school), adding conceptual understanding to the study. The mixed-method approach allowed me to observe the phenomenon of leadership in a digital context.

4.2 Phase one data collection

Phase one focused on answering the first research question: What common understandings do Saudi women health professionals have about their leadership in a digital context? To solicit these common understandings an online questionnaire was developed. The questionnaire items were based on a literature review and my experience as the developer of LAM. A questionnaire allowed connections to be made between different members of the Saudi medical education community (e.g. women leaders) and their understandings of leadership in a digital context.

4.2.1 Instrument. I developed a questionnaire in English (see appendix H) composed of items belonging to the four themes found in the literature review related to digital leadership, such that the questionnaire addressed four domains: digital literacy, digital scholarship, digital communication, and leadership. Based on best methods of questionnaire translation (Harkness, Pennell, & Schoua-Glusberg, 2004), the questionnaire was translated into Arabic by a professional translator and then validated through translation back to English by another professional translator. A discussion between myself and the translators took place to reconcile differences in interpretation. At this stage, it is important to note that the translation process required minor changes. The final Arabic language questionnaire was piloted with five Saudi women health professionals who follow the Twitter account of another social medical initiative similar to LAM. Piloting a survey helps determine its appropriateness, comprehensibility, and feasibility (Lavrakas, 2008). Respondents were asked to complete a debriefing form (see Appendix I) to determine appropriateness, comprehensibility, and feasibility of items in the questionnaire. The debriefing form did not reveal any issues with the study questionnaire that required altering the initial survey.

4.2.2 Participants. Using non-probability consecutive sampling (Sampath, 2001), the women audience of the LAM website and visitors and audiences of affiliated social media channels were invited to participate in the study. The sample was anticipated to include health professionals in various training phases, including undergraduate and graduate medical education programs, as well as practicing physician/healthcare providers and faculty members of Saudi health professions schools. The study was conducted online and it was known from the outset of the research that determining the study denominator for phase one sampling would be difficult because the LAM initiative consists of a website and affiliated social media and content accounts (i.e., Twitter, Facebook, and Soundcloud). As an open platform, anyone can have access and a sizeable portion of those who visit online are not

regular visitors. In light of the purpose of the study, which was to explore the opinions of the community and its committed members and given that the Twitter page is where the most consistent interactions happen, the number of women followers on the Twitter site was used as the study population. This data base consisted of 585 women at the time of data collection in January and February 2018.

Based on Daniel's (1999) work and recommendations, I made the following statistical choices to determine sample size. Because it was not my aim to conduct inferential statistical analysis, I aimed for a confidence interval of 90% and a 5% margin of error which corresponds to a z-score of 1.645, and a sample proportion of 50%. The confidence interval is the probability that the margin of error contains the true proportion. In other words, if the study were repeated the range calculated will be expected to fall within the range on 90% of occasions. The higher the confidence level the more certain that the interval contains the true proportion. A commonly used confidence interval in research is 95%, but given that the goal in the present study was the use of descriptive statistics, I found 90% confidence interval to be acceptable. The margin of error is the level of precision of results; it is often expressed in percentages (e.g. +/- 5%). Finally, the sample proportion reflects what the results will be and is usually based on previous surveys; however, this is the first time the survey was used. Daniel (1999) recommends a conservative sample proportion of 50% if no previous data is available on the survey used. The following table collates the data required for sample size calculation.

Table 3

Statistical Information Required for Sample Size Calculation

Population size	**585**
Margin of error	.05
Confidence interval	90%
Standard deviation	0.5
Z-score that corresponds to 90% CI and 5% margin of error	1.645
Sample proportion	0.5

To calculate the sample size, I used the following commonly used equation for known population size (Daniel, 1999):

Sample size = population size * X / (X + Population size -1)

Where,

$\mathbf{X} =$ Critical value of the normal distribution at 90% confidence interval[2]* sample proportion * (1-sample proportion)/Margin of error[2]

$\mathbf{X} = 1.645^2*0.5*(1-.5)/.05^2$

$= 2.706*0.5*(.5)/0.0025$

$= 1.35 *.5$

$= 0.676 / 0.0025$

$\mathbf{X = 270.6}$

Sample size = 585 * 270.6 / (270.6 + 585 -1)

Sample size = 158301 / 854.6

Sample size = 185.23

Based on this statistical analysis, an acceptable minimum sample size is 186 individuals.

4.2.3 Data collection procedure. After securing the study committee's approval and the approval of the research ethics board of the University of Ottawa to engage human subjects in the study (see appendix J), I began data collection in January 2018. This began with a month-long recruitment campaign. Followers of LAM who shared their contact details with the website administration were invited with an email that included a link to the online survey (see appendix K). Additionally, an advertisement was posted on the home page of the LAM website and the associated Twitter and Facebook accounts (see appendix L). An invitation email that included the study information and consent form (see appendix M) and survey link to eligible participants was sent on the first day of the campaign. Two subsequent reminders were emailed to potential participants who had not responded on day 14 and day 28 as recommended by Dillman, Smyth and Christian (2008). Moreover, the website advertisement remained posted for 28 days and social media posts were made daily.

Willing participants were led to a survey via web link and consent was implied by their completion of the questionnaire, based on the original email sent to them that contained the consent information. Data was collected using Qualtrics.com and stored in a separate hard disk that is limited to the use of this study. The questionnaire required approximately ten minutes to be completed. At the end of the questionnaire, respondents were asked about their willingness to participate in the second phase of the study and to provide their contact information if they were interested in participating further.

4.3 Phase one data analysis

Data were analyzed using SPSS software version 24. Results were calculated as frequencies and percentages, and tables were used when appropriate. A summary of the response rate and sample characteristics is presented in the findings. The 5-point Likert items were regrouped into their original domains: digital literacy, scholarship, communication, and leadership. Given the overall purpose of this study and its mixed method design, within each domain the results are cross tabulated. Frequencies of answers are presented in the findings section for women who reported having leadership experience and then contrasted with answers of women who reported no leadership experience. Furthermore, cross tabulation of Likert items is presented for a smaller group of women in the sample, namely faculty members of medical schools.

4.4 Phase two data collection

Drawing on phase one findings, I developed the inclusion criteria for phase two as well as the interview guide questions. The objective of the semi-structured individual interviews with participants was to explore findings from phase one in more depth and to answer the following questions: 1) Why have women turned to LAM to exercise influence in their profession? 2) How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession?

4.4.1 Inclusion criteria. Respondents of phase one who self-identified as leaders by answering yes to Q2 (in part B of the questionnaire that asked: "Do you have leadership experience?") were invited to participate in phase two interviews.

4.4.2 Sample. No standard exists on sample size for qualitative research, however, the research aim (Varpio et al., 2017; Malterud, Siersma, & Guassora, 2016) and methodology (Creswell, 1998) should be used to determine the number of participants. Creswell (1998), for example recommends 20-30 for ethnographic studies. Given the time and resource limitations, that this study is made up of two phases, and given the small size of potential participants (43), I aimed to include a sample size ranging from 5-20. I also looked for achievement of data saturation, where no new information was emerging (Saumure & Given, 2008; Morse, 2000).

4.4.3 Instrument. After the inclusion criteria was set, a semi-structured interview guide was developed to address the targeted research questions. The interview structure was based on findings from phase one and findings from the literature review as advised by Creswell (2003). The guide was developed over the span of two months (May/June 2018). It

included 14 interview questions some of which expanded on findings from phase one to address the first research question of the study, and some were directly aligned with the second and third research questions (see appendix N). In the feminist tradition, diversity of experiences were sought in the interviews (Crenshaw, 1991). First, the questions asked were of particular concern to women's lives (e.g. How does your leadership as a woman manifest in your professional working environment?). Second, while the interview items were specified prior to the interview, participants were invited to share their views from their vantage point and were not limited to the interview items.

The guide that I developed was submitted to the research ethics board for approval, which was in early July 2018 (see appendix O). The guide was translated to Arabic by a professional translator and then validated through translation back into English, as per best practice in translation (Harkness, Pennell, & Schoua-Glusberg, 2004). The two translators and I discussed the translations and reconciled any differences in interpretation. Using the Arabic version, the guide was then piloted with two Saudi women who are part of another online community of health professionals similar to LAM, and who were not part of the study. These pilot testers were asked a few debriefing questions about the appropriateness, comprehensibility, and feasibility of the interview questions (see appendix I for debriefing questionnaire). Findings from the pilot informed revisions of the interview guide which were minor and pertained to the translation of terms.

4.4.4 Data collection procedure. Participants who expressed interest in phase two interviews were identified and were contacted via the email they provided in the final section of the survey. The recruitment email (appendix P) explained what the interview would address and how it would be conducted. Participants were encouraged to contact me with any queries they may have. Respondents who did not meet the criteria but who provided their contact information were thanked for their willingness and were notified of their exclusion from phase two along with a rationale.

In addition to respondents, who expressed interest from phase one, snowball sampling was utilized to increase the number of participants. At the end of the interviews, participants were reminded of the inclusion criteria and were asked if they knew anyone who may meet the criteria and may be willing to participate. Participants were encouraged to query those whom they recommended about their willingness to participate in the study. Email invitations were sent to willing participants that included a participant information sheet (appendix Q). The sheet familiarized the participant with details of the research project and addressed important issues including anonymity and the right to withdraw at any point. A suitable time

and method (in person, phone or videoconferencing) were arranged for each participant. A consent form (appendix R) was first provided before the interview commenced. Each interview was audio-recorded and transcribed verbatim, eight by myself and seven by a professional transcriptionist. Data from phase two were not translated back into English to maintain the authenticity of the data, with the exception of quotes necessary to illustrate certain themes for the purpose of this dissertation or any future publications in English journals. Quotes were translated by myself to Arabic and were translated back to English by a second colleague social scientist. The minor differences in translation were discussed and consensus was reached by myself and my colleague.

4.5 Phase two data analysis.

The interview data were analyzed using Ritchie and Spencer's (1994) 5-stage framework analysis. Framework analysis sits under the broad umbrella of qualitative content analysis. Approaches that belong to this group help identify commonalities and differences in qualitative data. After that, analysis is focused on relationships between different parts of the data and on creating themes. Framework analysis is an approach usually used for large-scale policy research (Gale et al., 2013) and is commonly utilized in healthcare research (Heath et al., 2012; Elkington et al., 2004; Murtagh, Dixey, & Rudolf, 2006). What makes framework analysis different from other approaches is the use of matrix output: based on an initial sample of interviews, data is iteratively coded into codes and sub-codes. It is important to compare and contrast data across interviews. I chose framework analysis because it goes beyond thematic analysis and allows a researcher to look across data and appreciate unique cases. Given the many competing concepts informing this project, this structured framework was used to ensure that the analysis was limited to the objectives of the research project. The deductive framework helped follow up on the a priori ideas from phase one. Transcripts and audio-recordings were analyzed using the following strategy of five stages (Table 4).

Table 4

Stages of Data Analysis

	Stage	Procedure
1	familiarization	I familiarized myself with an initial sample of five interviews by listening and reading the transcripts. At this stage I recruited a Saudi social scientist colleague to independently read and listen to the interviews. Both myself and my colleague made notes to enable us to recognize exceptional and interesting cases. The familiarization process was essential for the second coder because she was not present in the interviews and had slightly different views in certain cases. This required that we actively discuss the transcripts and audio-recordings.
2	Identification	An initial coding framework was developed based on examination of the subset of interviews, both myself and my colleague read the transcripts and underlined interesting segments of text and wrote description on the right margin and potential theme titles. Underlined segments ranged from a few words to whole paragraphs. The left margin was used for notes. After each of us completed our initial coding, we met to discuss our codes. Working through all five interviews, we discussed each coded section and why we have interpreted it the way we have and how related it was to the research question. Generally, we highlighted the same passages in similar fashion. We agreed upon an initial coding framework. The framework was shared with my supervisor and he provided further feedback. The process of refining, applying, and refining the analytical framework was repeated until no new themes emerged.
3	Indexing	Using Atlas.Ti, a qualitative data analysis software, I familiarized myself with the remaining interviews transcripts, then proceeded to code them using the previously developed framework.
4	Charting	Based on the developed coding framework, I charted the remaining data identifying sub-themes iteratively for the remaining ten transcripts. Commonality amongst participant as well as outliers were coded.
5	Mapping and interpretation	In the final stage, I compared the data and interrogated the findings further. This stage involved looking for similarities and differences by specialty, career stage, and digital media use.

The data analysis stages were interconnected and depended greatly on my ability as a researcher to critically reflect and find similarities and differences in the data. This

methodology required a back and forth approach between the different stages, resulting in a richer analysis (Walker, 1985). Framework analysis is a systematic approach that sits along the inductive-deductive spectrum (Pope & Mays, 2009; Pope, Ziebland, & Mays, 2000). As mentioned previously, this research project is both deductive and inductive with general domains recognized early on; however, room was left for themes to emerge. It is important to note that framework analysis is not a purely technical process. From a feminist methodological perspective, it is important to keep in mind that the researcher's positionalities and ability to reflect are important. This required that I keep my own reflective notes as the primary investigator and examine and re-examine findings. For example, developed codes are not certain and can be interpreted differently by another researcher. It is important to note that I'm an insider. I'm a Saudi woman health professional who may be desensitized to contextual subtleties. An outsider, a Western researcher for example may have a different perspective towards the same data.

In this fourth chapter, I've described the methodological approach used to answer the research questions. Figure 3 offers a summarized reminder of the mixed method design described. In the following chapter, I go on to report the results of this study.

Phase one — January-April 2018

quan instrument development	quan data collection	quan data analysis	quan data results
Literature review themes: literacy, scholarship, communication, leadership elements	**Procedures:** LAM Polulation (N=585) online ads/emails Qualtrics web-based survey	**Procedures:** frequencies and cross-tabulations using SPSS	Interpertation of quan results
Pilot with 5 women	**Products:** Likert scale: 15 items across 4 domains. Multiple choice questions	**Product:** descriptive statistics	

qual instrument development — May-June 2018

Results from phase 1 informed inclusion criteria and instrument development for phase 2

Pilot with 2 women

Phase two — July 2018

qual data collection	qual data analysis	qual data results
Procedure: N=43 through email and snowball sampling semistructure d interviews (n=15)	**Procedure:** framework analysis/Atlas-ti	
Product: audio recordings and transcripts	9 themes and subthemes	

Interpertation — August 2018

quan & qual interperted together

Product: discussion section

Figure 3 Explanatory sequential mixed methods research design

Chapter 5: Results

This chapter sets out the results of phase one and two. In the same sequence the study was conducted, I first present the descriptive quantitative findings of the questionnaire, giving a basic overview of the response rate and the characteristics of the participating women. I then present women's understanding of the digital context and women's purposes of following LAM. Furthermore, as is the main purpose of this phase, I answer research question one, establishing common understandings for leadership in a digital context amongst women health professionals who are part of the LAM community. I do so oriented by the original themes of the literature review: digital literacy, scholarship, communication, and leadership elements. Finally, I give a brief descriptive account of women who are also faculty members of medical schools.

Second, I present the qualitative results of phase two. Initially, I describe the sample of participants. Then I present the results organized using the eight domains developed for the research instrument. The themes follow the sequence of the research questions. Expanding on answer to research question one, I present two themes: 1) women's understandings of leadership in their profession; 2) leadership in/through digital contexts. In answer to research question two: I present the 3 themes: 1) women's motivations for seeking influence through LAM, 2) facilitators to women's influence through LAM; 3) barriers to women's influence through LAM. The latter two themes are categorized further into micro, meso, and macro facilitators and barriers. Finally, in answer to research to question three: I present the following themes: 1) women's interaction in LAM community; 2) women's perceptions of influence as a result of their interactions 3) women's perceptions of their leadership identity further categorized into roles and identities.

5.1 Phase one quantitative results

5.1.1 Response rate. The response rate to the survey was 38.7% (n=72/186). Women health professionals who completed the survey in its entirety made up 37% (n=69/186) of the previously calculated sample size.

5.1.2 Sample characteristics. Twenty-nine (40.3%) respondents were 18-24 years of age, 37 (51.4%) were 25-34 years, 3 (4.2%) were 35-44 years of age, and 3 (4.2%) were 45-54 years of age. The average age is 27.32 (SD=1.00).

The respondent sample had the following characteristics: 21 (30%) women who identified as undergraduate medical learners; 26 women who identified as postgraduate learners (residents and registrars) (37.14%); 14 (20%) who were practicing and are at a

continuous medical education level; and 9 (12.9%) identified as other health professionals. No health professions university students took part in this study. Twelve respondents (16.7%) were faculty members in medical schools. There were two questionnaires missing information on medical education level.
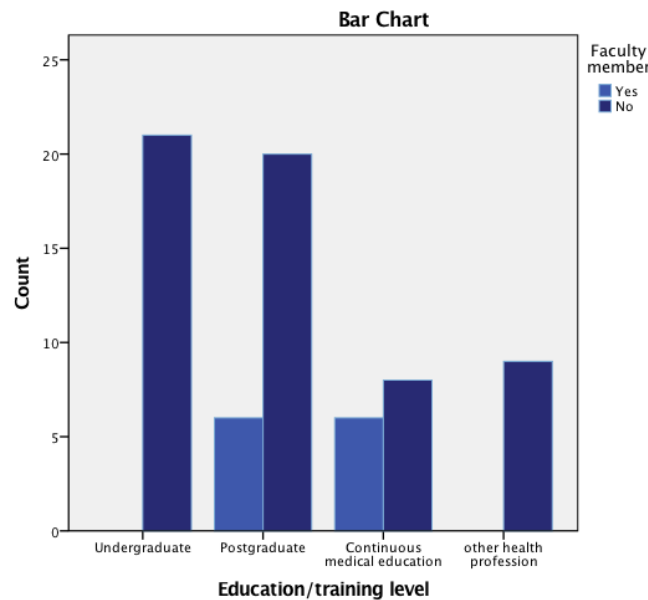
Figure 3 Phase one participants' educational level

Seventy (97.2%) respondents identified as Saudi citizens and 2 (2.8%) identified as non-Saudi (i.e. Kuwaiti and Nigerien). Sixty-three (87.5%) respondents resided in Saudi Arabia, while 9 (12.6%) resided elsewhere (i.e. USA, Canada, Niger, Kuwait).

5.1.3 Understandings of the digital context. Women respondents' understandings of the digital context varied (Table 5). Women were less likely to see websites as a part of the digital context in comparison to other definitions (23, 38.1%).

Table 5

Understandings of Digital Context

What does the digital context mean to you? Select all that apply	Frequency
A virtual space that requires an electronic devise to gain access to.	38(%53.8)
Social media platforms such as Twitter and Snapchat.	40(%55.6)
A virtual space where digital media such as images, videos, podcasts can be accessed	37 (%51.4)
Websites such as LAM	23(%31.9)

5.1.4 Purpose of following LAM. Most women followed LAM because of their interest in medical education content (50, 69.4%). Women were significantly less likely to follow LAM for it providing knowledge in Arabic. Women were also less likely to recognize their influence as members of the digital community to be a motivating factor to engage with LAM (Table 6).

Table 6

Reason for Being a Part of LAM

Why are you a part of the LAM initiative? Select all that apply	Frequency
Because it provides medical education content that I'm interested in learning about.	50(69.4%)
Because it provides information in Arabic	14(19.4%)
Because I recognize the opportunity of influence I might have being a member of this digital community.	20(27.8%)

5.1.5 Digital literacy. Most women leaders ($N = 58$) agreed (26, 44.8%) or strongly agreed (28, 48.3%) that a leader in a digital context is someone who could find useful information on the internet. Women leaders also agreed (24, 41.4%) or strongly agreed (30, 51.7%) that a leader in a digital context is someone who could find useful information in research articles.

Women with no leadership experience had similar frequencies, agreeing (6, 42.9%) or strongly agreeing (6, 42.9%) that a leader is someone who could find useful information on the internet. Women in this group also agreed (8, 57.1%) or strongly agreed (4, 28.6%) that a leader in a digital context is someone who could find useful information in research articles.

Women leaders and women with no leadership experience agreed (32, 55.2%; 8, 57.1%) that a leader can evaluate information found on the internet such as blogposts and websites articles. Interestingly, 7 (12.1%) of women leaders disagreed that dissemination of knowledge through digital platform is a responsibility of a leader in a digital context.

5.1.6 Digital scholarship. In this domain, women leaders ($N =58$) agreed (25, 43.1%) or strongly agreed (27, 46.6%) that a leader in a digital context is someone who challenged traditional ways of thinking. Women with no leadership experience ($N =14$) also agreed (6,

42.9%) and strongly agreed (3, 21.4%) on challenging traditional ways of thinking, while 4 (28.6%) disagreed with this statement.

Women leaders agreed (22, 37.9%) or strongly agreed (29, 50.0%) that a leader in a digital context is someone who comes up with innovative ideas. While women who had no leadership experience, mainly agreed (8, 57.1%) to the same item. Three respondents (21.4%) with no leadership experience disagreed with the latter item.

5.1.7 Digital communication. Women leaders agreed (31, 53.4%) or strongly agreed (23, 39.7%) that a leader in a digital context is someone who can influence followers' opinions. Women with no leadership experience mainly agreed (11, 78.6%) that a leader can influence followers' opinions.

Women leaders agreed (35, 60.3%) or strongly agreed (16, 27.6%) that a leader in a digital context is someone who can influence followers' practices online. Women who had no leadership experience, agreed (8, 57.1%) to the same item and 4 respondents (28.6%) disagreed with this item.

Women leaders agreed (30, 51.7%) that a leader is someone who can influence followers' practices in their daily professional lives. In the same item, 5 respondents (8.6%) did not have an opinion selecting "I don't know". Similarly, women with no leadership experience agreed to this statement (7, 50%) and seemed unsure as well of its pertinence (3, 21.4%).

Women leaders agreed (26, 44.5%) or strongly agreed (27, 46.6%) that a leader in a digital context is someone who can debate trends relevant to niche community. Women with no leadership experience, similarly agreed (8, 57.1%), however, the remaining respondents were scattered amongst other options, women strongly agreed (3, 21.4%), Disagreed (2, 14.4%), or did not know (1, 7.1%) of the relevance of this item.

For the final item in this domain, women leaders agreed (24, 41.4%) or strongly agreed (26, 44.8%) that a leader in a digital context is someone who inspires others to share digital content. Women with no leadership experience agreed (7, 50%), strongly agreed (3, 21.4%) or disagreed (3, 21.4%) to the same item.

5.1.8 Leadership components. The final domain, included ideas that came across in the literature review but did not necessarily belong to a major theme. These items are leadership-related concepts. Women leaders agreed (17, 29.3%) or strongly agreed (33, 56.9%) that a leader in a digital context is someone who has vision. Women with no leadership experience mainly agreed (5, 35.7%) and strongly agreed (4, 28.6%) to the same item.

Women leaders agreed (29, 50%) or strongly agreed (16, 27.6%) that a leader in digital context shares power with others. Women with no leadership experience agreed (5, 35.7%), strongly agreed (1, 7.1%), disagreed (2, 14.3%) or strongly disagreed (2, 14.35%) as well as did not know (4, 28.6%) whether they agreed or disagreed about the same item.

Women leaders agreed (30, 51.7%) or strongly agreed (20, 34.5%) that a leader in a digital context is someone who takes the cultural context into consideration. Women with no leadership experience strongly agreed (2, 14.3%), agreed (4, 28.6%), or disagreed (5, 35.7%) to this item.

5.1.9 Women faculty of medical schools. Of the 72 respondents, 12 were faculty members of Saudi medical schools. Six identified as postgraduate learners and 6 identified as continuous medical education learners. Those respondents' understandings of leadership in a digital context are presented in the following table.

Table 7

Women Faculty's Understandings of Digital Leadership

	Strongly Disagree	Disagree	Agree	Strongly agree	I don't know	N
Digital literacy						
can find useful information on the internet.	1(8.3%)	1(8.3%)	5(41.7%)	5(41.7%)	0	12
can find useful information in research articles.	1(8.3%)	2(16.7%)	6(50.0%)	3(25%)	0	12
can evaluate information found on the internet such as blogposts and website articles.	0	2(16.7%)	5(41.7%)	4(33.3%)	1(8.3%)	12
is skilled at disseminating knowledge through social media platforms.	0	3(25%)	5(41.7%)	4(33.3%)	0	12
Digital scholarship						

Challenges traditional ways of thinking.	1(8.3%)	2(16.7%)	4(33.3%)	5(41.7%)	0	12
Can come up with innovative ideas.	0	4(33.3%)	4(33.3%)	4(33.3%)	0	12
Digital communication						
inspires others to share digital content.	0	3(25%)	5(41.7%)	4(33.3%)	0	12
can debate trends relevant to niche community.	0	1(8.3%)	6(50%)	5(41.7%)	0	12
can influence followers' opinions.	0	0	9 (75%)	3 (25%)	0	12
can influence followers' practices online.	0	4 (33.3%)	4(33.3%)	4(33.3%)	0	12
can influence followers' practices in their daily professional life.	1(8.3%)	2(16.7%)	8(66.7%)	1(8.3%)	0	12
Leadership components						
has a vision.	0	3(25%)	2(16.7%)	7(58.3%)	0	12
shares power with others.	0	2(16.7%)	7(58.3%)	2(16.7%)	1(8.3%)	12
takes the cultural context of their audience into consideration when developing digital material.	0	2(16.7%)	6(50%)	3(25%)	1(8.3%)	12

5.2 Phase two qualitative results

In this section, I first present the participant characteristics in section 5.2.1. Second, I present the findings in three major sections: 5.2.2 What are women's common understandings of leadership in a digital context? 5.2.3 Why have women turned to the LAM project to have influence? 5.2.4 How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession?

5.2.1 Participants' characteristics. Fifteen women took part in this phase of the study, ten of whom also took part in phase one and expressed a willingness to participate in phase two. Through snowball sampling, an additional five potential participants were nominated and agreed to participate. See appendix S for interview time/method logs.

Thirteen participants were medical doctors, one was a dentist, and one was a pharmacist. Thirteen of the participants were faculty at three different health professions schools, while the remainder had educational responsibilities as part of their professional position (See table 8).

Table 8

Professional Demographics of Phase Two Participants

ID	Career stage	Specialty	Position/Work setting
F1	Early career	Preventive medicine	Associate scientist at research center and affiliated medical school.
F2	Early career	Hematology	Demonstrator at medical school.
F3	Early career	Radiology	Demonstrator at medical school.
F4	Early career	Anesthesiology	Registrar at community hospital.
F5	Early career	Clinical pharmacist	3rd year resident at University hospital.
F6	Early career	Cardiology	Demonstrator at medical school.
F7	Early career	Pathology	Demonstrator at medical school.
F8	Early career	Ear, Nose, and Throat	Demonstrator at medical school.
F9	Late career	Family medicine	Consultant at community hospital.
F10	Early career	Pathology	2nd year resident at university hospital.
F11	Early career	Laboratory medicine	Recent medical graduate.
F12	Early career	Primary care	Lecturer at medical school.
F13	Early career	Dermatology	2nd year resident at university hospital.
F14	Mid-career	Hematology	Assistant professor at medical school.
F15	Early career	Dentistry	Lecturer at dental school.

5.2.2 What are women's common understandings of leadership in a digital context? In this second phase, I continue to answer research question one in more depth. In the following three sections I present the two main themes: 5.2.2.1 women's understandings

of leadership in their profession; 5.2.2.2 women's leadership in/through digital contexts. See Appendix T for full thematic framework and more illustrative quotes.

5.2.2.1 Women's understandings of leadership in their profession. Expanding further on findings from phase one, I sought to explore women's understandings of leadership within their profession. When asked "*what does leadership mean to you?*" participants' understandings can be grouped into six sub-themes: leadership attributes, leadership enactment, leadership skills, and the influence of specialty on leadership understandings, gendered leadership, and the influence of culture on leadership.

5.2.2.1.1 leadership attributes. With respect to who a leader is, participants identified several tensions. First, leaders were identified as one person versus a group of people. Women were far more likely to define leadership as an individual rather than a team of people. An example is the following definition from one participant: "Leadership is when *someone* has an active role." [F4]. Another participant describes a leader as: "A leader is *a person* who is able to convince others and guides them in the right way" [F10]. A participant drew on her own experience as a leader to define what it meant to her: "As a leader, I can tell you a leader is a person who has a vision and willpower to help others" [F14].

Fewer participants saw leadership as a team of people. For example, a participant who seemed to be aware of the difference shared: "Leadership is more than one person. There's more than one person as the head." [F5]. Another participant explained why leadership becomes a group endeavor: "Sometimes, especially in big organizations, it is difficult to approach leadership as a one person…you have to think as a group and act as a group" [F9].

A second tension I found in the data was participants defining a leader as male versus gender neutral. Many participants implicitly described a leader as someone who is male by using masculine pronouns: "…*he* is a person who has vision" [F3]. Another participant shared: "A leader is someone who carries most of the responsibility…*he* is the responsible one" [F5]. Other women, although not many, clearly stated that leaders are men, for example: "Leaders now are mostly men" [F2]. In the same vein, another participant gave her opinion influenced by her professional experience: "Men are the leaders here [names workplace] at all levels" [F4].

On the opposite end, many participants described a leader as being gender-neutral. A participant shared: "It doesn't matter man or woman, they are the same…it is about the person" [F9]. Another defined leadership in relationship to herself: "I don't see that me being a woman has anything to do with taking up a leadership position." [F7]. Furthermore, some participants defined leadership as gender neutral, comparing past organizational experience

with current change. For example, a participant explained: "Before it was expected to have male leadership, now we are expected to have female leadership" [F9].

Finally, some participants defined leaders as those who have inherent leadership qualities, while others emphasized that a leader is someone who becomes one through learning and experience. In terms of a leadership being inherent, a participant evidenced her perspective: "The way I see it, some people just have it…I see it with my students who are too young to have experience and still they can influence their peers" [F15]. Another participant discusses her perspective: "Some people just have *it*…an ability…everyone knows someone like that I guarantee that…of course there is no proof either way but I think it is a universal rule" [F2].

On the other hand, many participants emphasized their belief that leadership is something that can be acquired. A participant stated: "If you want to be a leader, you have to work hard and seek experience…like you want to be a doctor, you have to learn…go to medical school…the same applies to leadership, you have to gain experience" [F8]. Another participant pointed out that leadership can be taught: "if we want good leaders, we have to teach leadership…there is talent here [name of medical school] but it is not nurtured and developed" [F1]. A participant implied that leadership is related to seniority that comes as a result of a long career of experience: "When you say leadership, it's someone who's gone through enough knowledge to guide others…You have to have a lot of experience collected over the years" [F10]. Finally, the tension of nature versus nurture is captured in the next quote from one participant: "there are naturally born people with good leadership but it can be something that is taught." [F6].

5.2.2.1.2 Leadership enactment. Participants also defined leadership in terms of how to lead and how leadership is enacted. First, some participants articulated leadership styles of being democratic versus authoritative when making decisions. A democratic style was a preferred approach by some participants. A participant stated: "taking opinions of others and voting is important in leadership" [F1]. Another participant shared: "I'm more aligned with a leader who asks me what I think" [F3]. One participant contrasted 2 experiences she had, clearly favoring a more democratic style:

> "A few years ago, we had a department head that did not listen, did not ask, did not tell us anything, not to me certainly…that was very frustrating…now we have a head who is accessible, communicates more, cares what everyone's needs are, asks for our opinions" [F14].

In contrast, a few participants saw that an authoritative approach was more suitable. A participant shared: "You have to tell people what to do in leadership." [F9]. Another participant explains why an authoritative approach is in her opinion preferred: "If you don't give others clear direct orders your authority will be compromised" [F11].

Another emerging tension from the data is how leadership is about delegating versus controlling tasks. Some participants saw the delegation of tasks to be an important aspect of how leadership in enacted: "You must allow your team to do their work and make decisions." [F2]. Another participant explained why delegation is important: "If you allow your team to take an active role, you empower them…I find they will do better, if you show that you trust them" [F15]. On the opposite side, some participants viewed the enactment of leadership to be about controlling tasks. One participant shared why exercising control is vital in her view: "you have to exercise control to maintain quality" [F9]. While another explains further: "If you do not closely monitor the workflow, you risk things getting out of hand…in my experience, you have to keep an eye even on the small details" [F5].

Finally, the *how* of leadership was seen by many participants as the sharing of power versus the view of a few participant of power as centralized. Many participants were eager for power-sharing when talking about themselves as employees/followers. For example, a participant discussed her relationship with her unit head: "My boss [gives name] is a good person but his emails are orders…I would appreciate if he would allow me to do what I think is right for the students…as a course coordinator, I have an opinion" [F15]. Another asserted her perspective as a leader: "Leadership should be sharing the power and spotlight with your team, they have to make decisions also, you are not always there." [F14]. On the other end of the spectrum, a few participants thought centralized power is appropriate at certain times: "Sometimes it has to be top down" [F3]. Another participant points out when this approach might be appropriate: "it is easier for everyone sometimes if one person is making the calls…decisions are not always favorable but it makes things go faster and people fight less" [F11].

5.2.2.1.3 Leadership skills. Participants also described several skills they thought leaders should have. Communication was a common skill that participants mentioned; as one participant put it: "A leader must have communication skills that are well developed." [F4]. Other participants spoke about specific communications skills. For example, one participant emphasized listening: "To be truly a leader you have to listen to what other say…a very difficult skill to have…who listens nowadays?" [F15]. Another participant pointed out the

vitality of being articulate and well-spoken: "You have to have good clear language…a clear voice…these things are important; I feel some people don't pay attention to them" [F8].

Participants commonly mentioned the importance of having a vision and objective to achieve. One participant shared her perspective: "I think leaders are people who have a vision that others don't necessarily see, and then they make them come to life that is what makes them different…that is what makes them leaders" [F10]. Believing in one's ideas and following up on objectives was not enough in one participant's opinion; she pointed out that having vision and sharing that vision with others are two distinct things: "A leader's vision is clear to him and all those he leads." [F3].

Another common skill that participants saw as important was creativity. One participant discusses her view: "You have to have your own mind and ideas…a leader makes up beneficial solutions and innovative things" [F8]. Another participant contrasted leadership with management in this respect: "that is the difference between leadership and management. One is creative and the other is not, it's just executing" [F7]. While the majority of participants focused on the creativity of the individual leader's part, one participant discussed the importance of creativity as a team: "Brainstorming sessions are where leaders can come together with their teams…making ideas is a group thing, as a leader it is important to be part of that process" [F6].

Finally, many participants saw executing objectives as an important skill to have as a leader: "You have to make achievement to be seen as a leader" [F2]. Often participants used this to judge the leadership of others: "that is how I know someone is a leader…what have they done? Many people take positions of leadership but don't do anything they said they would or was expected of them" [F1]. Another participant explained it from her position as a leader: "As the head here, I assess myself. Everyday, what have I done? what do I need to do? This effects the morale…my people [employees] will suffer if I'm not a doer" [F9].

5.2.2.1.4 Influence of specialty on understandings of leadership. Some participants defined leadership within the confines of their respective clinical specialty. An anesthesiologist defined leadership as being situational, influenced by the dynamics of her clinical work in the operating room: "Being the leader depends on what the situation you're in is. Things happen very fast in the operating room, the patient bleeds out and you have to make decisions in seconds." [F4]. A pharmacist thought leaders ought to be detail oriented, pointing out that women excel over men in that respect: "I can say with confidence that a female [leader] does a better job in Pharmacy than a man because she is more meticulous." [F5].

A family physician describes her field and asserts the leadership is about the art of persuasion when addressing the public: "Leadership in family medicine is about health promotion, if you can convince people about what is good for their health, you have done your job as a leader" [F9]. On the other hand, another participant who is a pathologist speaks about the art of persuasion but confined to her work environment: "Pathology is about communicating with other specialties and departments, so as a leader here you should know how to talk to others outside of your department and convince them of your opinions." [F10].

In another example, a dermatologist speaks about leadership within her unique work environment, pointing out that leadership to her is about managing different people with different needs all at once: "Many patients come to the clinics and there are many members in the team, the students you have to lead all of them at once, it is very busy." [F13]. Finally, a participant who specializes in preventive medicine described how her field influenced her conceptualization of leadership: "…We deal with big issues, so we have to be sure what we are saying is accurate...Accuracy is very important for leaders in my field…we are very evidence-based" [F1].

5.2.2.1.5 Gendered leadership. When asked about their own leadership experiences, women often compared themselves to male leaders. Indeed, many women stated that leadership positions were occupied mainly by men: "The high-ranking positions are all being held by men" [F6].

Initially and in more general terms, many stated that there was little difference in status between men and women leaders. The difference was in whether a person had the qualities of a leader or not. A junior faculty member expressed her opinion: "I don't think it matters if the leader is a man or woman, the qualities of a leader are the same" [F3]. Another participant, a lecturer at a dental school, stated that she believed that women leaders in medical education faced no obstacles when striving for leadership: "I don't really think there are any obstacles in front of women" [F15].

However, in talking about their own personal leadership experiences within their respective medical schools or work settings, some of the study participants perceived gender difference between men and women leaders. The junior faculty quoted earlier stated a clear difference between men and women leaders. For example, she saw that women leaders were better at completing tasks than men: "Because you are a woman and you've completed this task the product is better than what a man could've done." [F3].

Another participant working at a university hospital perceived women to be more willing to take on leadership roles, given the chance to: "I find that women are more likely to

take on leadership roles when compared to men." [F5]. A cardiologist and faculty member at a medical school noted the positive effect women leaders would have on organizational culture: "Had women been appointed to leadership positions, our department would be less hostile." [F6].

Participants also perceived barriers to their leadership in their workplace. They differed, however, in what they identified as barriers to women's leadership. Participants, in the middle of their careers, and who took on major leadership roles within their organizations, noted the opinions of followers: "They might not be very happy with the concept of a woman leading." [F14]. Another seasoned leader explained: "I'm not welcomed as a leader…it is difficult" [F11].

Other participants, those earlier in their careers and training programs, were adamant in dismissing barriers to women's leadership. A participant early in her academic career and medical training, saw that the expectations were the same and discrimination of any kind did not exist:

"Where I work [name of hospital], I've noticed that the administration does not give way to discriminate between men and women, we are all expected to do the same tasks and no special treatment is given to me because I'm a woman." [F7].

5.2.2.1.6 Influence of culture on leadership. Participants spoke of the broader Saudi culture, and more specifically the organizational culture of medical education. In terms of the Saudi culture, women were optimistic regarding the recent changes: "The culture needs to change, and it is changing." [F6]. Many participants recognized the need for women to taking on more leadership roles: "It is our time, we have to give more of ourselves as women" [F1]. Furthermore, many participants explained why it is important for them to take on more leadership roles at this time: "Before it was difficult to gain influence as a woman, not many people believed women should be in leadership roles…but a shift is occurring…women should take advantage of that, especially those who have something positive to add" [F4].

Many aspects of organizational culture were discussed by participants, the most common themes addressed by participants are outlined in table 9, each including a representative quote.

Table 9

Aspects of Organizational Culture in Medical Education

Aspect	Quote
Vertical hierarchy	F2: "There are people above you, you can't ignore them."
Power imbalance	F10: "As a faculty member you are weak, and the dean and the vice deans are strong."
Masculine culture	F6: "We have more men in my specialty so it is a man's world, you have to raise your voice to be heard."
Aggression	F6: "These practices of aggression are common practice, everyone does them."
Unhealthy competitiveness	F6: "People don't want to show the good aspects of their work because they don't want you to compete with them."
Exclusion	F3: "Had there been encouragement to take leadership roles during training, I would have taken more roles."
Women averse	F13: "They might not be very happy with the concept of a woman leading."

5.2.2.2 Leadership in/through digital contexts. Expanding on responses to items two and three under the digital communication theme from the previous phase – "A leader in a digital context can influence followers' practices online" and "A leader in a digital context can influence followers' practices in their daily professional lives" – participants were asked: Why is having an influence on others' practices through online channels (such as LAM) important to them professionally? Participants' answers from phase one questionnaire eluded to the fact that many women were not interested in having influence through LAM. However, in this phase, many participants expressed deeper answers stating that they want influence through digital media but struggle with many issues the prevent them from engaging in such mediums. Women's reservations included a fear of being perceived unprofessional and of digital tools compromising their privacy. Furthermore, a few participants discussed how they influence others' practices in the work environment.

Many participants feared being perceived as unprofessional if they use digital media for influence. One participant vacillated between wanting to have influence on others and deterring herself away from it. Her statement shows real conflict between how these tools can help advance career (by reaching out to other professionals in her field), but also that they

may not be perceived as *professional*: "Digital tools help me reach out to others in my field, but I don't think it is a professional tool. Twitter is not a long-term tool, it's not a solid base to stand on." [F2]. Another participant described her experience: "I have to think about who I'm at work, I can't just be tweeting…I think others would perceive me as not serious" [F14].

Another common concern amongst participants was privacy. A participant, although eager to use digital tools, expressed her concern. Although it would be a medium where she could reach her students, using the tool would be an invasion of her privacy: "My students are all on Snapchat, but I wouldn't use it for educational purposes, it is very invasive." [F4]. Another participant discussed the privacy setting on social media: "I have a personal account. It is private and sometimes I think what is the point? [Laughs]" [F1].

Participants were also asked about how they used digital tools and media to influence others' practices in their professional working environment. The very few cases presented were in regards to using digital tools to educate followers further about their profession: "Those who work for me at the school also follow me online, I try to share material, articles in blood-banking for example, that I know they need to learn for their work." [F14].

Participants also shared their views in terms of the sharing and development of digital material and the concerns and issues faced in that respect. On finding and sharing knowledge, one participant explained her approach: "What you share online should be based on scientific evidence, some people [medical doctors] share blogposts that are not monitored or approved by anyone" [F7]. Another participant pointed out her view on digital content development: "It is not my job to develop material, it has to be from my university or the commission, a professional body, so we know it is accurate." [F2].

5.2.3 Why have women turned to the LAM project to have influence? In answer to research question two, I present three main themes: 5.2.3.1 Women's motivation for seeking influence; 5.2.3.2 facilitators to women's influence through LAM; and 5.2.3.3 barriers to women's influence through LAM.

5.2.3.1 Women's motivations for seeking influence through LAM. Question three in Part B of phase one questionnaire asked: "Why do you follow LAM?". One of the possible answers was Multiple Choice three: "Because I recognize the opportunity of influence I might have being a member of this digital community". However, a very small percentage of women chose this statement as a reason. In phase two, I aimed to clarify this point further, reminding participants of this item and their answer, and asking: Is having influence important to you? Why? And why did you turn to LAM for help with this?

Having influence was important to nearly all participants. Participants ideas around what influence meant and why it was important to them varied. Many participants thought influence was about getting other people to do something:

"I have an administrative position in my workplace, I actually have no power to make people do anything…they really have to choose to do it…I sometimes think it is because I'm a women, but at other times I feel like other men in similar positions are not influential at all…if you ask the students, they wouldn't know his name…so definitely there must be a better way to motivate people to do good work" [F9].

Another participant shared why influence was important to her: "I have no say. How do I change people's mind?…Only last week I was trying to review the curriculum and couldn't get my colleagues to buy into competency-based education, I'm sure you know about that. I did not have the skill to convince others" [F15].

Not many participants associated their turn to LAM as a turn for influence. The few that did shared two major understandings. First, some participants identified their influence as being a part of an initiative that ultimately influences the wider medical education community. Many participants saw LAM as an opportunity to affect change in medical education and practice and that they are part of that: "Grassroot things like this are important, they can be cultivated into something meaningful." [F2]. Another participant explains how she saw herself being part of that influence: "I'm one of many who want things like this to [LAM] succeed…we need these kinds of projects desperately at medical schools…being a member of this [LAM] makes me feel like I'm doing my part in positive change" [F10].

Second, some participants spoke about their influence in a more individual manner, stating that being a part of LAM made them recognize their personal influence. One participant shared:

"Influence is very important to me…you're not a leader if you don't have influence…it is very important, but it is more difficult to be influential I think especially in a digital platform like LAM, it is a lot of work and responsibility…I think about my own blog on the University website and my department social media accounts, not many visits there" [F14].

Another participant explained how she thought LAM would be a good place to share her opinions:

"Actually there is no forum for medical people in Saudi medical education to share their opinions, writing for LAM, I realized that I can share my opinion, there is

potential there to help people who have ideas to reach out to the community with their ideas" [F12].

Few participants were motivated to join LAM and have influence through this initiative, in fact, many participants shared their several reservations. Many participants worried about professional versus personal use of digital tools: "Social media is for personal use, for my family and friends to see. If I want to do something for my career, I'll do it at work." [F2]. A participant points out the tension between being an influencer and the prestige of her job:

"I'm not sure, being a social media influencer has a heavy price. You are really putting yourself out there in a way, I see what others end up saying online, it is sometimes inappropriate, but it gets a lot of attention…because controversial things usually do…I don't want to turn into that…I keep it for personal use only" [F11].

Other participants spoke about the limited use and effect of digital initiatives: "This is fun definitely, but it is limited, how much influence can you have in our profession putting up videos or blogposts, there are other ways in medicine…the number of patients you see...the number of publications you have" [F2].

5.2.3.2 Facilitators to women's influence through LAM. In this theme, women shared what they saw as facilitators to their leadership in a digital context. Facilitators were seen at the micro and meso level, but the barriers, as I will illustrate in the next section were seen more prominently at the macro/systematic level. At the micro level, women pointed out that their positive outlook, creativity, willingness to change, and independence as learners as individual facilitators. At the meso level, participants spoke about their students, colleagues, and their professional circles as facilitators to their use of digital tools. At the systematic/macro level, few participants spoke about their institute's supports for the use of e-learning and digital tools and their encouragement for fostering international partnerships through digital media.

5.2.3.2.1 Micro level facilitators. First, some participants expressed their positive outlook and willingness to joining the digital platforms. An early career participant who is new to digital tools described her experience: "I only recently began using digital tools and it made such a positive impact on my career, I read more about my specialty and that makes me a better professional" [F4]. Another participant noted how others have used it to their career benefit and suggests that she use it too, recognizing that she at an individual level may be served by such tools: "I've noticed that a lot of our consultants are on Twitter, and they're advertising what they do on Twitter, and it actually works. I have to start using it too." [F6].

Participants identified personal attributes they had that helped them use digital tools to gain more influence. Some participants saw their personal creativity was well suited for the open and free digital space. Participants spoke about how the digital platform allowed them to develop their own digital content based on what they wanted to and what their followership responded to, in turn, these women had greater influence on their professional circles. A pathologist, found a suitable platform for her material on Instagram where she shares images of her work. She explained the extent to which her influence has reached:

"People [other pathologists] from all across the world have viewed my social media platform, enabling me to develop, and show more complex cases to be studied…this is not the case at work, where I'm limited to the cases I'm assigned to...I'm currently doing oncology, not my favorite…I'm interested in dermopathology…the presentation also…I have a problem with that…my specialty can use digital tools quite a lot, there is potential" [F7].

Few participants discussed how their ability to accept change helped them gain influence. One participant shared: "I'm very accepting of change…I think I like to explore new ways of doing things, this allows me to expand my network online and that helped expand my professional network in my specialty" [F14]. Another participant explained:

"I'm one of those people that believes in *be the change you want to see*. For new things to happen, we have to be accepting of change, we can't ignore the digital world or shrug it off we have to become a part of it…as faculty members we should be a part of it, that would elevate the level of content" [F15].

Finally, a few participants suggested that their independence and ability to self-direct their own learning enabled them to excel in a digital environment:

"I'm independent when it comes to learning, I can make my own schedule, I can decide what is a good credible source and what is not, this is important when you are using the internet…you have to be able to appraise material…I believe I can do that and my residents [Postgraduate medical trainees] who follow my page benefit from this" [F9].

Another participant points out that her ability to connect her followers to others online:

"I can find things online and I love to learn…I'm an internet surfer, I think people who I share this material with benefit a great deal…for example, I found this guy who was posting radiology things online and I shared that with my students and asked them to get in touch with him and see how we can collaborate" [F3].

5.2.3.2.2 Meso level facilitators. Participants also saw that their use of LAM enabled their influence at a meso/interpersonal level with their students, work colleagues, professional circles, and the broader social society. Participants often associated the need to turn to digital tools and social media platforms to appeal and connect to younger generations, who were portrayed as more tech-oriented. First, participants pointed to their students as people who encouraged them to use digital tools. An early career faculty member of a medical school explained why: "Social media has an appeal to the new generation, and it's more casual, so whatever barriers that exist with face-to-face interactions aren't there." [F8]. When probed further about the barriers that may exist in face-to-face interactions the participant stated that there is difficulty in being straightforward: "It is difficult to be straightforward at work, the way people conduct themselves, it wouldn't be appropriate to share information even if it is about my specialty whenever I want to" [F8].

Second, some participants mentioned that their work colleagues were instrumental in their turn to the use of digital tools. One participant shared: "Our department head tweets all the time and he attends to the students' needs…that encouraged me to be more available online" [F15]. Another participant shared how her colleague in this same profession gave her an example to follow:

> "My friend was contributing to the LAM website regularly and I asked her what are you doing? And she told me about it and encouraged me to join the conversation…when you see others you know and trust using it, I think you become more comfortable" [F12].

Finally, a participant pointed out that the adoption of her professional circles the use of digital tools as a facilitator to using digital tools: "Health professions education people are all online, the professional bodies…you know this, this gives legitimacy to these tools…that makes me more comfortable to using them for my own career and my leadership" [F14].

5.2.3.2.3 Macro level facilitators. Few participants identified facilitators at a systematic level. Those who spoke of the institutional push to incorporate more e-learning approaches and creating international collaborations. In terms of institutional encouragement, one participant stated: "Our college is keen on being cutting edge and forward thinking…obviously digital platforms are a big part of that, we have faculty workshops that teach how to use social media and what to put on faculty pages" [F2]. In terms of creating international collaborations, an experienced physician leader explained how her institute encouraged crossing boundaries and how Twitter helped her, and her team to bring about new international partnerships:

"Through Twitter, we noticed that a lot of new organizations are trying to partner with us, and this shows that there is a great positive influence…this reflects positively on our institution that we are able to do that…I'm hoping we get a grant for our work, we still haven't heard back" [F9].

5.2.3.3 Barriers to women's influence through LAM. In this theme, women shared what they identified as barriers to their leadership in a digital context. In the previous section, facilitators were mostly seen at the micro and meso level, but barriers were experienced more at the macro level. At the individual level, participant expressed their lack of knowledge and skill in use of digital tools, time management skills, and the addictive nature of social media as barriers they experienced. At the interpersonal level, participants spoke about loss of face-to-face human interactions, management of initiative channels, how others online may perceive them and more specifically how their colleagues may perceive them. Finally, at a macro level participants identified lack of governing policies and censorship.

5.2.3.3.1 Micro level barriers. Participant identified their lack of knowledge and skills on how to use digital tools as a barrier to further influence through digital contexts. One participant discussed her view:

"I'm not against it [Digital tools]...the opposite I'm for digital tools, I see social media influencers, they get a lot of attention…now imagine if their message was a positive one…My problem is that I don't know how to use it properly" [F1].

Another participant shared that not only does she not know how to use digital tools she is intimidated by how many there are and their fleeting nature: "I could learn how to use something, Snapchat for example, but by the time I do people would have moved on to the next thing" [F4]. A common concern amongst participants was their poor writing skills: "I'm not a good writer. I never was, Arabic or English" [F11]. Another participant noted: "we write a lot in medicine but we don't really write write, I mean creatively, so I'm not used to that and I feel like I don't want to put myself out there this way" [F3].

Some participants also noted that their time management skills were a significant barrier to their influence. One participant explained her dilemma: "Yes, digital tools have a lot of potential and I know I should use them but that would require I manage my time more properly…I find I'm very busy with my clinical duties and my teaching duties" [F6]. Another participant pointed out that the digital platform was time intensive: "making material up is active work...you sit there and think to yourself *tweet something* that requires a lot of time, I'm not sure I have that kind of time" [F10].

Participants also pointed out the negative effects of social media as a barrier to using them: "Actually, I stop myself from using social media because it is addictive. You feel you have to check it continuously, fear of missing out on something…that's a side effect of social media I think" [F7].

5.2.3.3.2 Meso level barriers. A participant expressed that one of the meso barriers that she experienced is that digital media removes the human interaction element thereby limiting her influence: "Human interaction has to do with body language, and when you're completely having interactions in a digital world that might get lost." [F8].

Another late career participant, pointed out the management of digital media related to her work and department was often done through several individuals, she conveyed that when it comes to managing online content, especially in the case of social media accounts, her influence is limited if she delegated the task to someone else, and does not continuously follow up on the initiative account's progress herself:

"The hardships and challenges are many. The least of which is when someone goes on holiday and they're managing the account [department account], they don't delegate. Then the account [social media] becomes stagnant, and dies down a bit. It needs a lot of follow up. Can't be left unattended. It's my responsibility to follow up." [F9].

Another barrier to some participants was the perceptions of others online. One participant for example, mentioned the effect of what people say on moral and productivity:

"What people say about women leaders affects our moral, even online, and this is often discouraging to the point that it makes you want to quit…some people try to tear down all the work you do, and everything you put out there." [F9].

Another participant shared that she worried about how her colleagues, and how they may perceive her in a digital platform: "You have to be really careful, I don't want to give my work colleagues the wrong idea about me." [F13].

5.2.3.3.3 Macro level barriers. Participants mainly identified barriers to the use of digital tools for influence at the systematic level. Participants were weary of the lack of policies in their work environments addressing the use of digital tools and social media. One participant explained: "It is mandatory to update your university webpage, but it is greyer on social media and websites beyond the university website" [F3]. Another participant shared that the lack of policy may implicitly mean that these tools should be avoided: "If the [name of workplace] wanted us to use digital platforms they would tell us how to use them" [F10].

Others, spoke of the issues of censorship, and how that may limit the amount of content that can be put out there: "You can't put anything online. It has to be pre-approved

first by your organization." [F14]. Another participant expressed her opinion: "You must be really careful with the information that is posted so that it aligns with the policies of your work place" [F15]. Another spoke about the room for creativity but points out that she is being monitored: "You can be as creative, as long as you keep in mind that the administration is reading it." [F8].

5.2.4 How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession? For this third and final research question, I present three main themes: 5.2.4.1 women's interactions with LAM community; 5.2.4.2 women's perceptions of influence; and 5.2.4.2 women's perceptions of their leadership identity as a result of their interactions in LAM community.

5.2.4.1 Women's interactions with LAM community. Under this theme participants spoke about what kind of interactions they had with LAM, how their interactions developed, and what factors influenced their interactions. In terms of the type of interactions, participants wrote articles for the website: "I asked you [the moderator of the website], if I could join in some capacity, and you suggested writing an article, so I did" [F3]. Others engaged in the weekly hashtag discussions: "I just love reading the hashtag, and participating in the discussions" [F6]. Some participants shared their own content material (blogposts, images) voluntarily: "I had similar material to the work you're doing and I sent it to you" [F9].
In terms of how participants' interactions with LAM developed, some participants noted their weariness towards engaging. One participant shared how her engagement was gradual:

> "At first I was an observer. I just read posts, but then I saw somethings I agreed with other people wrote, and other things I didn't. I wanted to speak up, some opinions I did not agree with, especially things I experience at work and people are talking about them" [F13].

Participants also portrayed their signing up for the newsletter and their following the social media accounts as a form of interaction and support for the initiative: "I follow everything, the Twitter, the Facebook, the podcast...increasing the followership increases the influence, so I think that is important to support the project [LAM]" [F4]. Another participant portrayed her interaction as one of promotion: "I'm always looking for material to share on my page, LAM has great content, especially the research material, that is very important to me, I feel like I want to share it with others" [F7]. In terms of the factors that influenced how participants interacted with LAM, some participants talked about the digital platform providing an alternate space to discuss issues that cannot be readily addressed in the real-world environment. the former participant went on to say:

"On LAM you talk about how to be a good teacher, how to deal with medical students. Some people don't agree with this, you know, they think a tough approach with students is the best way. I disagree and I think this is important to talk about online because medicine is a tough culture, and we need a place to talk about some things" [F13]

In the above quote the participant explained that having the LAM forum facilitates productive discussions about topics academics face, and the different approaches they adopt. From her quote, it can be discerned that for this participant, academic medicine's hostile culture deters people from addressing issues they face at work, however, online through LAM and perhaps beyond, a digital context provides a space where concerns can be addressed.

Another factor that influenced how participants interacted with LAM is the accessibility. One participant contrasted her interaction with the workflow in her work environment:

"I really like how my contributions are not limited by time, I never miss anything, I can always come and share the material later, that kind of availability makes it easy to engage with the website. Unlike my department, if you miss a meeting…you miss the meeting" [F10].

A final factor that influenced why a participant interacted with LAM was the use of the Arabic language and indigenous materials. When asked about the language used on LAM, the majority of participants did not think digital material needed to be in Arabic: "In medical education, we speak English mainly, reading in English would be easier." [F4]. The exception to this was one participant, who seemed aware of the relationship between language and identity:

"The reason why I follow this website is because it is in Arabic and the designers make an effort to use Arabic references. There is a long history of medical sciences in the Arab and Islamic world, it seems forgotten, but I think there is a wealth of information there we should try to understand…I don't know how, but I know it is important" [F3].

Despite the aforementioned opinions, the majority of participants, although identified as recurrent visitors to the website and affiliated social media accounts, shared their reluctance to develop content or engage with other people's digital content: "It really is a great job, the website, but I can't make anything like this, although I want to" [F11]. Another

participant shared her opinion: "Somebody needs to do it [create digital professional content], it's not going to be me, I'm not the one." [F8].

5.2.4.2 Women's perceptions of influence as a result of interactions in LAM community.
Women's interactions on LAM affected how they see themselves as being influential in their profession in three main ways. First, LAM provided an interdisciplinary platform. Some women saw LAM as providing opportunity for them to work with other kinds of specialists and professionals. Something that one participant notes is difficult in her busy clinical working environment: "It is a place where I can meet other people, people I wouldn't in my everyday work, but on this platform [LAM] I can" [F14]. One participant however, pointed out the difficulty in interacting with others from other disciplines:

> "As a dentist, some of the ideas I have don't necessarily apply to physicians…there is a barrier, we use phantom heads [A simulation based tool used to teach dental procedures] other health professionals don't use them, so I feel like I'm not influencing anybody because they are a different kind of specialists" [F15].

Second, many participants viewed LAM as a novel initiative that provides much needed information that is lacking in medical education and practice: "LAM made me aware of medical education as a discipline, before I thought education was something that people just knew how to do." [F5]. Participants' increased awareness of Medical Education as a discipline was perceived by many to enhance their ability as educators, as one participant shared: "Becoming a better teacher will surely increase your influence in the work environment, a lot of people struggle with the idea of being a good teacher, it comes after being a doctor" [F15]. On the other hand, few participants were put off by LAM's content, making them aware of their potential negative influence: "I'm a course coordinator, interacting with others on LAM made me self-conscious about all the things I don't know about education…I may be doing things wrong, harming my students because of the things I don't know as an educator" [F12].

Third, almost all participants viewed that digital tools such as LAM are a necessity in this day and age, to communicate with a generation that is tech-oriented: "I think at this stage, it [digital use] is mandatory. You have to adapt to the new generation, and this is an integral part of their day to day lives." [F8]. Another participant points out how she thinks her students will perceive her and how LAM played a role in shaping her perception of influence:

> "If students see you actively online, they are more likely to see you as an approachable and understanding teacher who know what they are talking about…my

experience with LAM has made me reconsider this…before I wasn't sure about having my student on my social media" [F1].

5.2.4.3 Women's perceptions of their leadership identity as a result of interactions in LAM community.

5.2.4.3.1 Roles. This theme encompasses how women take on their various professional roles, and how they report how others perceive them, as a result of their interactions in the LAM community. Those roles included being a health professional, educator, content developer and content sharer, and leader.

Many viewed their main role online to be a certified health professional: "In my bio [a space on social media platforms where users can put identifying information about themselves], I wrote what my specialty is and where I graduated from…I don't give people medical advice but I present information about certain conditions" [F9]. Some participants pointed out how digital tools are becoming a growing part of a health professional's role, for example: "There is a strong presence of some of the academics of ENT on social media, most of the people who are well known academics, everyone knows their accounts." [F8].

Many viewed their role online as an educator, that they had the skills to identify people's learning needs and communicate the material online: "I am able to teach people and identify when I need to simplify information and when to go into detail." [F4]. A few participants felt a responsibility towards their discipline, arguing that developing digital material and sharing it was part of their job: "I felt it was my duty to create content for my field, there is no content online." [F7], exposing the intersection between her roles as a digital content developer and health professional. Only one participant viewed her role as an administrator where she fulfilled the role of a 'guide' and an 'informant': "Our role online is to help guide them [colleagues], and inform them about how to register for the workshops and training." [F9].

One participant felt it wasn't her role to enrich digital content: "it isn't my job to write online, there are people who can do this" [F3], when probed further on why she felt this way and who might be suitable for the job: "I'm trained to practice medicine, go to clinics, teach student face to face…There are social media experts nowadays…people the department [At faculty of medicine where she works] can hire to put things online and manage them" [F3].

Some participants felt LAM was a place for them to enact a transient role of content sharer in two respects, the first was promoting LAM as a beneficial initiative: "It is important to tell people about grassroots activities like this, I tell my colleagues about it and how it is important to share material online and support it" [F13]. Another participant commented on

her role as promoter: "I think it is essential to promote such work [LAM], it is the least I can do to help the cause" [F14]. Second, few participants were more specific, articulating their role as content sharers:

"I like to come online every now and then and check the LAM website, and share the content, the posts about research, because I think people should learn more about being a researcher, it helps the website if you drive traffic to it by sharing the articles" [F7].

Few participants were aware of their role as a content sharer, the importance of the ascribed role was explained by one participant: "my followership is different from the LAM followership, so when I share the material in my professional circles, I know the message will get to more people who are not necessarily part of the LAM community" [F8]. Another participant commented on her ascribed role as content sharer:

"LAM is purely digital, there is no face to face component, it is important for me as a leader in my community of practice to bring the content to different meetings, and that is what I do, I suggest the articles in my lectures" [F14].

Not many participants saw their interaction with LAM to have an influence to who they are as leaders: "I think I'm a better educator…definitely, but not a leader…leadership is different…I see the positive influence it has on me, but my role as leader I think I need to join a development program." [F1]. An exception is one participant who through her interaction with LAM began to recognize the influence she may have on others through digital platforms: "Having written for LAM, I find I have an opinion and a voice, especially after I read some of the comments on Facebook by other people. What I have to say matters and can influence others" [F10].

5.2.4.3.2 Identities. This theme refers to the way in which women see themselves and how they construct their different identities. During the interviews, participants constructed personal identities of being women and mothers. Moreover, participants constructed identities of being professionals: health professional, educators and leaders in their professions and work environments. Here, I first present illustrations of how women constructed personal identities, then professional identities. Second, I bring focus to how women constructed leadership identities in relation to their interactions on LAM.

In terms of personal identity constructions, for some participants their identity as a woman was strong: "A woman is at the heart of the home and work" [F9]. In the previous quote the late-career participant asserts that her gender is an integral part of both the home and work. Another participant stated that her gender was a facilitator for her leadership:

"Being a female is helping me rather than putting me down." [F5]. On the opposite end, few participants spoke about their gender as a hindering factor to their career. The following participant shared how she sees herself against the backdrop of a male-dominated work environment: "As a women, I do great things always…in an environment of men, I have to do super things to get recognized" [F14].

Furthermore, the few women who were mothers in the study sample constructed their identities as mothers. Participants often talked about motherhood in compromising terms, implicitly stating that mothering was often at odds with being a health professional. One participant explained how she sees herself: "Being a mother requires that I sacrifice for my children…As a physician that is often difficult to do…they [her children] pay the price" [F15]. Another participant described her role as a mother "I'm a mother of two children, they have needs. I'm constantly balancing my work with my duties at home…can you imagine if I have to tweet too [share material on Twitter]?!" [F15].

In terms of professional identities, many participants spoke about how they thought of themselves as health professionals. One participant shares how developing as a health professional made her more self-sufficient: "I'm more independent as a physician…Being a doctor helped me recognize my abilities as an individual" [F2]. Another participant reflected on how she grew as a professional: "My work environment is constantly changing…when I first started in my residency, I think I was very innocent. As the years passed, I noticed that I was becoming more competent…more sure of myself…it did not happen overnight" [F14]. A participant portrayed not having a mentor as a good thing: "I did not have a mentor…I think it's better that way for a leader, you have to depend on yourself more to excel" [F5]. Another participant talked about why she is suited for her specialty as a woman: "Dermatology is very women friendly…actually I would say it's a women's specialty, it suits me…I'm more on the soft side" [F13].

A few participants spoke about the challenges they faced in becoming health professionals. One women described her experience: "At the beginning, I felt I couldn't cope, although I have personal qualities that enable me to be a caring physician, I listen, I'm empathetic…but it was difficult at times…it is a demanding job" [F8]. A few participants spoke about the challenges of being a minority within their respective specialties: "Cardiology being male dominated, I'm often the only women in the round [clinical round]…I feel like there is a men's language that I don't speak" [F5]. Another participant described her environment as not being conducive to career planning: "I often don't know

what the best option is for my career, if I'm being honest, let alone leadership aspirations…I have to be independent in my choices and stick by them…no one helps you" [F3].

As educators, many women constructed their identities within the confines of their work environment, few did so within online environments. As educators in the real world, many participants had a positive outlook. For example, one participant stated: "I love to work with students in all stages…they keep you on your feet…you have to read constantly to keep up with their questions…I'm a life-long learner, I like to learn" [F1]. Another participant pointed out how she developed as an educator: "I'm always willing to give…teaching others is a great way to give…and I'm a giving person, if someone is willing to take it" [F1].

Although women were optimistic about digital tools and willing to use them to enhance their educational experience, a few women were skeptical of what kind of educators they were online. One participant explained her lack of identification with digital tools: "Actually its funny, I've been appointed lead on our e-learning project and I don't know anything about digital tools…I'm not technical, I don't take to it" [F15]. One participant explained how her use of digital tools has in fact limited her influence as an educator: "I'm not good with technology…I want to use it but its intimidating…I don't want my students or colleagues to see me make mistakes…because I'm not online as much as my colleagues…I'm not reaching my full potential as a teacher…I'm a regular teacher" [F14].

Second participant spoke about their development as leaders. Some recognized within themselves leadership qualities. One participant claimed that leadership is about having ideas which she can develop: "I believe I have leadership qualities, I have ideas" [F6]. Another participant defined her role as an educator with her role as a leader: "I do consider myself a leader in terms of the guidance of students." [F7]. Another participant saw leadership as having self-awareness and motivation: "Leadership to me has always been leading myself first. I've never viewed it as a position." [F9]. Others saw the potential to 'become' a leader, highlighting that they viewed leadership in terms of something to aspire to: "I see in myself the potential to become a leader, I have the skills and the knowledge needed." [F5]. Some participants also saw their leadership as serendipitous: "I did not think of leadership…it happened because no one is specialized in the same field…I wasn't looking for it" [F14].

Many participants, however, struggled between their desire to be leaders and their self-perceived lack of leadership skills. For example, a participant did not see herself as a leader, expressing that her skillset was not yet developed for leadership: "I don't see myself as a leader, I still have skills I need to improve." [F1]. While another pointed out the tension between her multiple duties: "I'm a doctor first…leadership is good for some…I think I have

a leader's qualities but I need to learn more…leadership wasn't taught in medical school or in residency…so I'm not prepared" [F13].

More in answer to the research question, in their interactions with the LAM community, some participants saw digital tools as competing with their real-world presence. One participant saw Twitter as hindering while constructing her leadership identity: "Twitter takes time, I'm either online or at work leading, as a leader I have to be present" [F2]. Other participants, though few, saw digital tools as complementary to real-world leadership. A participant expressed how her digital presence is part of who she is as a leader: "I'm clear online to the people I work with, they see what I say and they can come back to it, I don't have to repeat myself" [F14].

A few participants also saw their interactions with LAM as helpful to their development as leaders. One participant describes how LAM has made her aware of her ability to change as a leader: "When I see another woman doing something like this [LAM]…it makes me think differently about how I can influence others…I'm a leader in my department but sometimes I don't feel like I'm helping anyone…maybe there is another way…I'm open to change that's my approach as a leader" [F14]. Another participant pointed out how her interaction with LAM made her recognize her willingness as a leader in her work environment to be more accommodating: "Well I was surprised to see that the way work was handled on LAM was much more casual, yet the work got done…that made me wonder why isn't it like this at work? As a leader I think it's my job to make everybody comfortable" [F1].

Chapter 6: Discussion, contributions, and future directions for research and practice

Adding to the growing body of literature on women's leadership in medical education (McDade et al., 2008; Morahan & Bickel, 2012; Pololi et al., 2012; Dannels et al., 2008; Dannels et al., 2009), the findings of this study suggest that Saudi Arabian women's experiences of leadership are similar in some ways, yet different in others. Women health professionals who took part in this two-phase study, first a questionnaire then individual interviews, shared their views and experience of leadership in a digital context. Participants' opinions and perspectives provide us with a better understanding of leadership as process and how the concept of influence may be thought of as a result of studying it in a digital context.

In what follows, I first provide an overview of the study. Second, I discuss the limitations of the study. Third, I outline the study strengths. Fourth, I discuss the results, integrating findings from both phases, and comparing findings of this study with those from the literature, highlighting the need for the contextualization of leadership knowledge and the utilization of digital tools in gaining influence. Finally, I will reflect on the contributions this study makes to theory, methodology, practice, and point out areas for future research.

6.1 Overview of the study

Using an explanatory sequential mixed-methods design, I aimed to investigate the perspectives of women health professionals who are a part of the LAM digital community, regarding leadership and influence in a digital context. More specifically in phase one, I explored the following question: *What are women's common understanding of their leadership in a digital context?* Then in the second phase, I expanded on some of the findings of phase one, exploring women's leadership in their profession and their experiences of influence. Moreover, I explored the second and third research questions: *Why have women turned to LAM to exercise influence? And how have their online interactions influenced their leadership identity development and perceptions of influence?*

Over a seven-month period (January-July 2018), I collected, analyzed, and interpreted the data, taking a transformative stance as a researcher, and using the conceptual framework discussed in chapter 3 section 2. The sequential design I adopted allowed me to the explore the tiered research questions. The complex research questions do not stand on their own; rather they build on one another. That is, findings from phase one aided me in developing the instrument for phase two and provided insights that required further exploration in phase two. Using a mixed-method design widened the scope of the study and provided a more comprehensive understanding of leadership in a digital context.

In many aspects, leadership in a digital context was perceived by women who were part of the LAM community positively. Descriptive findings of phase one and the themes making up the thematic framework from phase two provided insights into women health professionals' perceptions and experiences of leadership in digital media. While the findings are very rich and, I believe, add to our understanding of women's leadership, the study has some limitations.

6.2 Study limitations

As is the case in any research project, there are a number of limitations. As referenced in chapter 4 (the methods section) I had several concerns that I will address here in more depth. For phase one, I was concerned with the small number of participants, the response rate, the strict online method to collect data, the use of Twitter followership to determine population size, and the close-ended nature of the questionnaire. For phase two, I was concerned with the sample size and how participants shared their opinions, participants' self-nomination, and my position as an insider.

6.2.1 Methodological limitations of phase one. To begin with, the pool of participants who fit the inclusion criteria, women health professionals who are part of the LAM community, is already relatively small for both phases. For phase one, recruiting women health professional through online media such as the LAM community was limited by the small size of the community (n=585). The effect was compounded by the sole dependence on an online survey to collect data, rather than the suggested blend of online, mail, or face-to-face survey collection (Dillman et al., 2008; Dillman et al., 2009). Furthermore, the potential participants were busy health professionals, who are known to be difficult to survey (Cunningham et al., 2015; Kellerman & Herold, 2001). I took several measures to increase participation by diversifying the ways that I disseminated the online survey: posts on the website, use of daily social media posts, and snowball sampling. The response rate of 38.7% is not optimal; I cannot draw any generalizable conclusions, but that was not the purpose of this project. Given the explanatory nature of this study, I believe this response rate is acceptable.

Most likely a reflection of the composition of LAM community, the pool of participants was made up mostly of physicians and a minority of other health professionals (e.g. dentists). This may also limit how the findings may be interpreted. Findings may represent how physicians view leadership in a digital context, but not how other health professionals view it; they may have a different interpretation of what leadership means to

them in this context. Consequently, the findings may have been more reliable had the response rate been higher or there was representation of health professions other than medicine.

Given the open digital platform and the various channels the LAM initiative had (website, Facebook, Twitter, Soundcloud, newsletter), it is difficult to ascertain the size and demographics of the population. The absence of this information has two implications. It is difficult to examine how participants came to know LAM and for how long they were part of the community. Despite this limitation, I did collect pertinent demographic data that included age, nationality (Saudi versus non-Saudi), and participants' reasons for following LAM and their general experience of using digital tools (personal versus professional use), and the type of social media platforms they used. This information gave me a better picture of who the participants were. Moreover, I used the Twitter followership to determine the sample size. I chose Twitter because it was where most interactions happened and because it provided a concrete number on members of the community, opposite the website or other channels where it is difficult to determine who is a constant member of the community. I found, however, that the Twitter followership is limited as well. The Twitter page is open to any visitors, not just those who follow the account. Additionally, the tweet advertising the study was retweeted and shared through other platforms by some of the followers, this fluid process increased the number of people who may have become aware of the study, but it was also difficult to trace. Therefore, the Twitter followership was only an indicator of the population.

Moreover, the questionnaire Likert items were developed based on literature findings and included domains of digital literacy, scholarship, communication, and leadership. The closed-ended questions may have limited respondents considerably. With the intent of breadth in data, the streamlined design of the questionnaire was necessary to engage the respondents and increase the chance of questionnaire completion (Babbie, 2008). However, the 10-minute easy-to-fill questionnaire may have limited respondents to specific answers. While this is a well-recognized limitation of quantitative survey instruments in general (Babbie, 2008), I do believe that this common issue was mitigated by the mixed-method approach I adopted for this study. Certain points where deemed necessary for further exploration, and my understanding of them increased in depth in the qualitative approach of phase two.

Finally, some survey items are informed by my positionality and assumptions as the moderator of LAM. In chapter 3 of this dissertation (section 3.1.3.1 contextualized knowledge), I discussed the importance of the Arabic language and its influence in

developing digital content. My own belief in the importance of developing material that is presented in Arabic influenced the questionnaire items. Phase one findings, however, show the participants may not agree or are unaware of the influence of language on the generation and mobilization of knowledge.

6.2.2 Methodological limitations of phase two. The limitations of phase two were somewhat similar to phase one. First, after determining the inclusion criteria based on phase one findings, the pool of potential participants amounted to 43 women (those who had leadership experience and were interested or willing to participant in phase two). Ten women responded to email invitations and five were invited through snowball sampling. Fifteen health professionals took part in the second phase. The sample size in this phase may be considered insufficient by some. For example, Creswell (1998) recommends 20-30 participants for qualitative studies. More recent medical education methodology research advocates using the context and method to determine the sample size (Varpio et al., 2017). I have adopted this approach in this study. In terms of context, I had a small population and I collected data strictly through an online questionnaire. Furthermore, potential participants of this study were busy health professionals who may not have had the time to participate. In terms of method, the mixed-method approach allowed a more comprehensive picture to be taken by collecting both quantitative data and qualitative data. Given these reasons, I believe that the sample size of 15 is acceptable.

Moreover, as in phase one, participants chose to participate in this phase. Self-nomination may be a result of participants' interest in the topics of leadership and the value of exploring it in a digital context. Potential participants with less interest in the topic may have varying opinions that would have given the findings a different dimension. Participants were also mostly physicians and are early in their career; therefore, the opinions may not reflect the wider health professions or women advanced in their career. Because of their inherent leadership role with the medical team, physicians may identify with this role more and as a result participate in the study. Another more plausible explanation is that this majority of early career physician participants reflects my personal network of professionals as the moderator of LAM and a fellow physician.

My position as an insider who knows the participants' identities may have influenced what participant shared in my interviews with them. Participants may have censored their opinions, especially around the topic of gender. Knowing that the interviews were recorded and that the study findings may be published, women may have given an inaccurately

favorable picture of their work environments and their experiences of gender and leadership within them.

Furthermore, as I stated earlier in this dissertation, my positionality as the creator and moderator of LAM has significant influence on how this project came to be and how I may have interpreted the data. Participants shared a wealth of reasons that prevented them from turning to digital tools to enhance their leadership and provide them with influence in medical education. Aware of my favorable attitude towards digital tools and their utility, it was important for me to adopt a qualitative analysis method that cross-cut through the data and provided an initial framework that anchored the data interpretation. Furthermore, framework analysis, allowed me to invite an Arabic speaking colleague to independently assess an initial portion of the data and develop the framework, giving me more confidence that the data interpretation was not unduly influenced by my positionality. Although a second coder was recruited to develop the initial coding framework and this decreases the bias somewhat, including a second and a third coder are more robust methodological practices (Barbour, 2001). The short timeframe in which the data were analyzed and the lack of access to an Arabic-speaking coder were influencing factors.

Finally, findings from phase one showed that less than 25% of participants followed LAM for influence. This exposes an assumption in the second research question: *Why have women followed LAM to exercise influence?* The assumption is that women follow LAM out of a desire for influence. Phase one results show that this is not the case and that the issue is probably more nuanced. Having become aware of this unjustified assumption, I developed the interview guide in a manner that expands further on phase one findings, asking phase two participants about their desire for influence or lack thereof.

6.3 Study strengths

From the many things this research project has to offer, one key advantage and a main point of strength is its focus on a non-Western context. While there is an abundance of studies based on countries and communities in the West (Dannels et al., 2008; Dannels et al., 2009; McLean et al., 2013; McDade et al., 2008), there is a need for similar research in non-Western contexts. There is no way of discerning if the issues working women, and in this case health professionals, face in the West are universal or present in other regions of the world. Indeed, many questions remain unanswered, or worse left to assumptions. This study adds to the literature on gender in medical education in Saudi Arabia. At a time when medical education is globalized, this study flags an important issue: the marginalization of language

and indigenous knowledge and the need for contextualized theoretical foundations. Furthermore, mixed method designs are rarely employed in women's leadership in medical education. As a result, this study provides a novel approach to women's leadership, the findings of which, I believe, provide both breadth and depth.

The diversity of the participants with regards to specialty is another point of strength of this study. Having a voice from an array of specialties (e.g. hematology, pathology, dermatology, anesthesiology, dentistry, clinical pharmacology, and public health) within medical education enriches the project and gives it more dimensions. As pointed out earlier, specialties seem to have an influence on how women conceptualize leadership. This helps me learn more about which views, roles, and experiences Saudi women health professionals shared no matter what their specialty is, as well as the ones that are unique to specific health professions. In addition to specialty, the institutions where these women health professionals carry out their duties are diverse. Having women health professionals coming from different institutions with varying organizational cultures shed light on the status of women's leadership in different institutions, as well as its progress. For example, as presented earlier in the results women in tertiary institutes have a more positive outlook for women's leadership then those in university-settings.

Furthermore, this project derives some of its novelty from its focus on digital leadership, expanding the study focus to cover not only traditional forms of leadership, but new and innovative ones too. Here, I considered how online content and interactions can shape the views and beliefs of women health professionals, and directly or indirectly affect their healthcare practices and experiences. Twitter is frequently thought of as an e-learning tool (Forgie, Duff, & Ross, 2013). Many medical educators use it to advance learning and scholarship. In this project, I add to the literature on the uses of Twitter, primarily as an indicator of study population, as well as how Twitter can be thought of more broadly as an instrument of influence and further leadership through digital media, and not merely as an e-learning tool, as it is often conceptualized in the literature (Forgie, Duff, & Ross, 2013; Melvin & Chan, 2014; Ryan, Carlton, & Ali, 2004).

I have taken a novel feminist stance that I believe aided this project in uncovering knowledge that adds to the mosaic of feminist work. A transformative feminist perspective allowed me to explore women's leadership and capacity for influence at an important turning point in gender dynamics in Saudi Arabia. Covering Saudi working women's views, experiences, roles, and leadership in the medical education highlights areas where gaps exist,

such as the need for contextualized knowledge, and provides suggestions for improvement such as the utilization of available digital tools.

6.4 Integration of findings

6.4.1 Common understandings women have of their leadership in a digital context. Phase one survey of women belonging to the LAM community revealed their understandings of the digital context and purposes for following LAM. There is very little agreement amongst previous studies on terminology around the digital context. Terms used to describe the digital context included digital world and online platforms (Ahlquist, 2014; Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017). For this study, I chose the term digital context to highlight the dynamic nature of the digital setting and its interconnectedness with the analogue world. Respondents agreed that the digital context was a virtual space where social media platforms and different types of media can be accessed. Women were least likely to associate websites with the digital context. This finding is surprising, given that the LAM initiative is at its core a website, which these women and other followers accessed on a regular basis. This finding is significant because in previous studies, websites that are mainly closed communities are usually seen as the start of digital initiatives (Ahlquist, 2017; Ahlquist, 2014), whereas LAM is open-source and activities are divided between social media accounts and the website.

Women followed LAM mainly for its ostensible purpose, providing knowledge on medical education. Of paramount interest to this study, women were less likely to recognize their membership as a way of influence for themselves. Digital leadership, especially through social media, is tethered to the idea of influence, not only for leaders who wish to influence others by providing content, but also followers having more say in what content they wish to see (Ahlquist, 2014; Tremblay, 2017). Awareness of influence as a follower seems to be lacking amongst respondents, this point requires further investigation. Given that this study is transformative in its intention, creating awareness seems to be a logical initial stage of empowering women to use digital tools to empower themselves (Mbilinyi, 2015).

Additionally, the questionnaire revealed women's overall agreement on understandings of leadership in a digital context in four important domains: 1) digital literacy; 2) digital scholarship; 3) digital communication; and 4) leadership components. These perceptions are supported by previous studies, in that digital leadership is more knowledge-based and less hierarchical (Ahlquist, 2014; Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017).

Women leaders associated digital leadership with disseminating educational material on social media platforms. This suggests that women leaders may recognize the active role a leader takes on as *teacher*, a less explored aspect of leadership in medical education (McDade et al., 2008). An individual becoming a leader in a digital context may largely depend on how influential they are and the size of their followership. It is at this juncture important to ask where the influence comes from. Influence in the digital context largely depends on the ability to share knowledge (Tremblay, 2017). Findings from phase two revealed that many participants were reluctant to use digital tools. Many participants were concerned with the quality of knowledge available online and their role in disseminating material with questionable quality.

The findings also revealed that both women leaders and non-leaders regarded challenging traditional ways of thinking and having vision as important components of leadership in a digital context. This insight is important and required further exploration in phase two because leadership and management are often confused in the medical education literature (Kass et al., 2006; Hofler et al., 2016). In my previous study of Saudi women in medical education, those with long-standing careers often defined leadership as management and coordination and not as innovation (Alwazzan & Rees, 2016).

Women saw influence as an important dimension of leadership. However, what influence meant in practical terms differed between women leaders and women with no leadership experience. Women leaders in their respective schools/working environments perceived influencing others in their daily professional practices as important. Some non-leader respondents seemed unsure of the importance of this item. Women leaders, given their experience may recognize the interconnectedness of the digital context with the analogue world. This finding may indicate that women leaders view digital tools as educational aids that a leader can use to enhance professional education and practice. A deeper exploration of women's understandings of leadership and influence in and through digital media in phase two revealed that, many women did view digital tools as educational tools, where they can connect to their students, colleagues, and the broader professional society.

Overall, women agreed that leadership is a process, involving several stages and considerations on the leader's part, whereas in the women's leadership literature it is often conceptualized as organizational positions (Dannels et al., 2009; McDade et al., 2004; Tilstra, McNeil, & Rubio, 2012). The latter finding is not surprising. Leadership in medical education has long been studied from within vertical hierarchical structures (e.g. medical schools and university settings). This I believe narrows how leadership is understood and enacted. In a

digital context such as the LAM community, organizational positions do not apply and hierarchies are somewhat flattened. In support of this argument, women leaders agreed and strongly agreed that digital leadership includes the sharing of power with others. In comparison, women who did not have leadership experience gave varied answers, with 28.3% not knowing if power sharing was important. Given their organizational experiences, women leaders' awareness of power as a dimension of leadership is expected. In contrast, women who lacked leadership experience may not appreciate power as a dimension of leadership, or may not believe that power manifests in a digital context. The sharing of power with followers may reflect women's leadership styles. Women are known to adopt more democratic and participative leadership styles (Eagly & Johnson, 1990). Thus, power sharing may not necessarily be a dimension women are uniquely associating with the digital context.

A sub-group of the respondents were faculty members at Saudi medical schools. It is in this group that some women did not agree that challenging traditional ways of thinking and innovative ideas were important aspects of leadership in a digital context. This again may reflect organizational medical education culture. Moreover, women in this group seemed to disagree that a leader is someone who can influence followers' daily professional practices. First, women who are faculty members constitute a small group of the respondents; their low number in and of itself is reflective of their interest in such initiatives. Second, their lack of agreement to innovation and influence in the workplace as important components of digital leadership requires further probing. Women in academic medicine are integral to women's leadership in medicine overall, because the quality of their careers provides a standard that other women strive to achieve (Morahan et al., 2001). Thus, their understandings of leadership in a digital context is crucial.

An initial examination of women's common understandings of leadership in a digital context doesn't introduce a new way of viewing leadership as a concept or practice. Rather, it makes certain dimensions of leadership like influence more prominent, unlike literature covering women's leadership in medical education. Many studies document hierarchy as a distinctive dimension of leadership in medical education and a serious barrier to women's career advancement. As Conrad et al. (2010), found in their study, hierarchy made many followers in medical education passive subordinates, not involved in the decision-making process. In a digital context, leadership seems to be a process of reciprocal and interactive influence, this reciprocity distributes power between leaders and followers and is centered around knowledge and learning in a contextual manner (Yoo & Alavi, 2004). These findings

as I will demonstrate in section 6.5.1, have helped me further develop the initial conceptual framework.

Moreover, expanding on findings of phase one, in phase two women's understanding of leadership in their profession were explored further. In many ways, women's leadership experiences were similar to findings from the literature in Western contexts (Carr et al., 2015; Carr et al., 2018; Dannels et al., 2008; Dannels et al., 2009), although findings of this study showed women's leadership experiences were influenced by their gender more than those reported in the literature. During the interviews, women's perceptions of influence in a digital context were explored further. The notion of influence in the digital context or otherwise, was not explored fully in the literature on women's leadership, making it difficult to interpret findings in comparison to Western contexts. Indeed, the intuition of this study, given the unique gender experience of Saudi women health professionals was that digital media may be a place where women may turn to exercise influence. Women health professionals in Western contexts (Dannel et al., 2008; Dannels et al., 2009; Carr et al., 2015; Carr et al., 2018; McDade et al., 2008), despite their issues with gender equality, still have more freedom, therefore, it is understandable why this notion is less explored.

Participants agreed with much of what was presented in the questionnaire of phase one. In interviews of phase two, however, participants voiced concerns, not with what leadership in a digital context means but how feasible it is and how it can manifest. Given the lack of structure of digital platforms, participants worried about the quality of educational material shared online, and the need for developing large amounts of digital material and how to present it to others. This is a common concern pointed out in the literature, as a double-edged sword. On the one hand, digital platforms allow room for new leadership to emerge and have influence (Tremblay, 2017; Ahlquist, 2017; Ahlquist, 2014). On the other, finding and evaluating material to share on digital platforms presents issues of quality (Endersby, Phelps, & Jenkins, 2017). What curbed participants' enthusiasm for digital tools to further their influence was the responsibility they perceived a digital leader must take on as someone who presents knowledge to others. This finding is not surprising; participants of this study are health professionals who by virtue of their scientific positivist training may abide by evidence-based approaches. As a result, women held leaders to a higher standard.

In phase one, participants largely agreed with digital scholarship (the ability to innovate new ideas and implement new practices) as an important aspect of leadership in a digital context. The literature on this point remains shallow, though. Scholars portray being

online as part of being innovative, however how to enact leadership online requires further exploration.

Women participants agreed that leadership in a digital context requires a leader to be innovative and able to develop ideas further. Upon further probing in phase two, it became clear that participants agreed with this idea, though most struggled in articulating how a leader might go about developing new ideas. The main issue for participants was their busy schedules as health professionals not allowing them the time to undertake digital projects. Moreover, some participants put the responsibility to develop digital educational material on healthcare and educational organizations.

Participants also agreed in phase one that leaders in a digital context should have the ability to communicate with others directly, adopting a more horizontal hierarchy. This supports what is often stated in the literature (Ahlquist, 2014, Ahlquist, 2017; Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017), that much of the hierarchical barriers present in everyday organizational life dissipates in a digital context. Although in the deep exploration of phase two, participants expressed reservations about privacy and accessibility, illustrating the challenge some have with digital tools and social media platforms.

6.4.2 Reason for women's turn to LAM to exercise influence in their profession.
In answer to the second research question, I looked at women's motivations for seeking influences, facilitators as well as barriers to their influence through LAM. Integrating the findings from both phases in this section, I first discuss women's perceived barriers and facilitators around digital media use, referring to findings from the literature. Second, I discuss women's understanding of influence in light of feminist theory and Hofstede's cultural dimensions, comparing findings from this study to those from the literature on women's leadership in medical education. In addition, I question the benefit of digital tools for women in such a context. Finally, I discuss a conceptual framework that emerged from the findings.

In the first phase, participants did not recognize the opportunity for influence being a part of a digital community can have. In phase two, when participants were asked about their motivations for seeking influence through digital means, women expressed that they saw the potential in digital tools. However, they also expressed reluctance, worrying about professionalism, privacy, and the quality of material shared online. The participants' concerns are not unfounded. Previous literature highlights the many issues digital users, especially leaders and educators, come across when utilizing digital tools as an adjunct to their professional activities (Tremblay, 2017; Yoo & Alavi, 2004). Some participants clearly

demarcated the line between personal and professional use of digital tools (such as social media platforms) bringing into question how these tools can be professionalized and the need for developing protocols and guidelines for their use. Women's reluctance to use digital tools may be explained by Hofstede's uncertainty avoidance index. Individuals in Saudi Arabian society have high uncertainty avoidance, that is, they avoid uncertain or unknown situations (Hofstede, 1991). This may mean that Saudi women may avoid exercising influence in a digital context because it requires experimenting with new methods. These findings may also be interpreted through Hofstede's dichotomy of individualism versus collectivism. Participating women expressed their collectivist preference by articulating a need for recognition from professional bodies in the form of organizational policies and procedures outlining digital media use, in order for them to use digital tools.

While the facilitators to their leadership were mostly seen at the micro and meso level, the barriers were seen at the macro level. Digital tools facilitated women participants' growth as professionals with many stating that the open source nature and accessibility as reasons for using them. Moreover, at an interpersonal level, women use these tools to connect to their learners and colleagues alike, both within their institution and other institutions as well, thereby reaching a wider net of students and working professionals and expanding their professional networks. As addressed in the context chapter, in this project I am looking at the three different levels of social activities: micro, meso, and macro. Acknowledging these different levels would help us address issues more precisely. In this project for example, facilitators were perceived at a micro/meso level, indicating that future studies and actions should be directed at individuals and groups.

The facilitators found in this study do not align with the work of Hofstede (2001) on masculine versus feminine cultures. Some women who participated in this study seem to have found a space where they can express their individuality. Women's expression of different individual professional identities came in the form of sharing their own opinions on educational matters, and reaching out to others beyond their local professional circle. Participants of this study could not have done this without declaring their professional statuses and activities online. According to Hofstede, people who belong to a Saudi culture may, in an effort to appease collectivist values, shy away from expressing personal accomplishments. Initial findings of this study suggest that Hofstede's individualist versus collectivist classification of culture is perhaps too simplistic. To assume that a culture is either/or does not explain the complex negotiation women often take part in as professionals who are fast becoming digital users with their professional identities at the forefront. On the

one hand, women assert themselves more in a digital context – and this could potentiate their leadership. On the other hand, women use the digital context to become part of virtual professional circles, often looking for people who belong to their professional specialties (e.g. other surgeons).

The data revealed that women at the micro and meso levels are engaged, despite their reservations. However, at a macro systematic level, women were unsure of how their use of digital tools as professionals may be perceived by the institution and society in general. Many participants expressed their frustration in wanting to use these tools, but at the same time fearing they would appear less professional. Here it becomes evident that perhaps cultural identities are at play. From an intersectional perspective, women's experiences are at the intersections of their different identities (Crenshaw, 1991). This can be appreciated in considering the intersection of women's digital identities with their cultural identities. As digital users, women became part of the LAM community as followers, and agreed to take part in this study. This can be interpreted as a move towards empowering themselves. That is, the turn towards digital tools is in itself an act to overcome professional barriers that are imposed by culture. However, some women seemed empowered by their cultural identities. This is not surprising when considered against the current backdrop of cultural change, in which Saudi women, including the health professionals who took part in this study, are increasingly asserting themselves through digital mediums. Conventionally, gender and cultural identities may be thought of as static reasons for oppression (Crenshaw, 1991; Collins & Bilge, 2016). But in this study, such identities seem fluid and sensitive to external forces.

In terms of the barriers, participants found digital tools to limit the human face-to-face interactions. Women perceived face to face interactions as necessary for successful communication, in agreement with a previous study (Li et al., 2013). This reveals the complimentary relationship between one's real world physical presence and their digital presence. Digital interactions, as convenient as they are (e.g. video conferencing), are still considered by participants as a secondary mode of influence to in-person interactions. In light of this, in addition to asking "how do we use digital tools in medical education?", we must ask "how can women find a balance between their analogue and digital professional activities?". Participants also spoke about how other colleagues who are not online may miss out on the benefits, stressing that for digital tools to be useful more professional people should engage. With regards to barriers it is important to look at the systematic/policy level and the need for cultural change. Future studies should examine policies regarding digital

media use and the role of organizational culture in facilitating such change, given that it is an area that participants highlighted. This finding is of course not new to the 'digital versus real life' balance discussed in the literature (Tremblay, 2017). However, it is important to consider it against Hofstede's uncertainty avoidance index. Individuals who belong to high uncertainty avoidance cultures such as Saudi culture may be slower to engage in culture change. As a result, a multipronged approach may be needed to facilitate change.

Furthermore, participants spoke about the demand on their time. The participants' concerns are warranted, as discussed in literature review (Chapter 2, section 2.3.4), a leader in a digital context is expected to communicate in written format and to do so with all followers, given the horizontal governance structure that the digital context creates (Endersby, Phelps, & Jenkins, 2017). This finding does not answer how a leader can navigate the digital terrain, knowing that there is a demand on their time. Instead this finding generates more questions. For example, is it realistic to expect a leader in a digital context to be constantly online and engaged with all followers? How can a leader engage with followers without reverting to a vertical hierarchy that may ostracize some followers? Furthermore, the size of the followership may influence how a leader can communicate with their followership. From a transformative stance, how can a leader adopt a transformational leadership style, that attempts to engage more directly with each unique follower, if their digital followership is large?

Previous research on women's leadership in medical education showed that the extent of influence women had can be categorized in two main ways. First, women used their authority and power to influence others from organizational positions they reached, creating micro –environments (Pololi et al., 2012) and subverting existing systems to help other women. Second, women gained influence through leadership development programs, having broader influence on the medical education community. In this study, I found that women strived for influence in the same manner, expressing a desire to reach organizational positions and to join other women in fostering leadership development programs. However, Saudi women health professionals were different in that they faced different cultural barriers, especially in public universities. What is novel in this study, and is perhaps beyond how influence was addressed in previous literature, was the utilization of digital media to advance women's influence. In this respect, the current study presents influence as a concept in a unique way. By engaging women health professionals in a line of thinking that encourages them to conceptualize their activities online and through digital media as a form of influence.

Previous leadership research in medical education has not examined the concept of influence on its own (McDade et al., 2008; Pololi et al., 2012). As a result, it is difficult to say whether women in Western contexts need or may benefit from using digital tools to realize their leadership. Furthermore, it is difficult to say whether the findings of this study would benefit women in contexts beyond Saudi Arabia. I found that women are motivated for further influence in medical education, however, participants did not readily agree that digital tools were the best means to do so. From the literature on digital leadership, we know that leadership in a digital context is knowledge-based and less hierarchical (Ahlquist, 2014; Endersby, Phelps, & Jenkins, 2017; Tremblay, 2017). Participants of this study found these leadership attributes to be at odds with their preconceptions of leadership. For example, some participants discussed how they did not see it was their job as leaders in a digital context to find, appraise, and share useful information online. This finding may be a result of participants' lack of understanding of knowledge-based leadership, given their lack of experience of leadership outside of traditional organizational structures, which traditionally adopt authoritarian leadership styles. Although as leaders, women in this study seemed to like authoritarian styles, as followers talking about other leaders in the work environment and online, women expected interactivity and opportunity to contribute to the leadership process. The discrepancy between women's practice as leaders and expectations as followers requires further study. It is important to note that this too conflicts with Hofstede's classification of Saudi culture in term of power distance. According to Hofstede (2001) in Saudi organizational culture there is a high-power distance between leaders and followers. That is, followers accept the difference in power between leader and follower. The initial findings of this study show that women question this distance and many see it as a hindrance to productivity.

From the findings of both phases, a process of influence emerges. In alignment with literature findings outlined in chapter two, the collection of participants' views provides enough information to conceptualize the framework for this study, as will be illustrated later (section 6.5.1). From the qualitative study findings especially, I found that different women recognized different leadership elements. In alignment with feminist principles (Lorber, 2001; Bryson, 1999; Willis, 1984), the diversity of opinions resulted from women's different experiences of leadership and the digital context. Some spoke about leadership from their perspective as leaders while other did so from their perspective as followers. Other participants drew attention to the reciprocal influence between leaders and followers,

pointing out the influence of their followers in digital contexts on the type of content they develop.

6.4.3 Women's online interactions on LAM and their effect on women's leadership identity and perceptions of influence in their profession. In answer to research question three, women interacted with LAM in a myriad of ways, and developed identities and perceptions of their leadership in different ways. In what follows, I first discuss how women's engagement with LAM is in alignment with the transformative feminist stance I took as the researcher. Second, based on the findings of this study, I differentiate between women's roles and identities and point to a gap in the literature in this respect. Women constructed personal and professional identities in association with their personal/professional lives as well as the digital context. Finally, I discuss women's leadership identity development as a result of their interaction with the LAM community and leadership identities in their organizations.

What is interesting from the findings is how women's engagement progressed overtime. Women began as observers, but in time became more involved. In alignment with a transformative feminist perspective (Mbilinyi, 2015), through LAM, women were allowed to engage in professional aspects (e.g. as educators) beyond their direct specialty (e.g. preventive medicine) with other colleagues. As a consequence, women's intersecting identities were recognized and they were encouraged to evolve as professional individuals, as well as to recognize that their individual development is tethered to that of the organizational collective. This contrasts with literature on intersecting identities and the notion of intersectionality (Crenshaw, 1991; Hooks, 2014), in which the intersections of identities are examined from the individual perspective only.

From the study findings, I realized that women's development in a digital context, whether as professionals or as leaders, depended on the development of the collective, including their professional colleagues and students. Women often spoke about their role in supporting and cultivating LAM by sharing the content with others from their circles. The concept of collective or shared leadership is not commonly explored in the literature on women's leadership in medical education and it is an area for further study. Women in this study saw it was part of their leadership in their own professional communities to draw attention to LAM, using their influence as professionals to extend the influence of the initiative.

Women took on the roles of health professional, educator, and administrator. They also expressed identities as leaders, and as women. In this study, I differentiate between the

roles women take on and their identities. Both of which, can be studied further in the women's leadership literature (Carr et al., 2015; Carr et al., 2018; Dannels et al., 2008; Dannels et al., 2009). Like women in previous studies, these professional women took on leadership roles when it was expected of them (McDade et al., 2008; McLean et al., 2013). For example, a participant described her leadership appointment to director "serendipitously" by virtue of her rare specialty. Such a finding shows that this woman's identity as a leader intersects with her salient identity as a specialist. By framing her leadership identity as an unintended outcome of her specialty choice, she simultaneously constructs her specialist identity as powerful enough to be associated with leadership. At the same time, she constructs her leadership identity as secondary, less important, and not her priority. From an intersectional perspective, this particular participant's less developed leadership identity may be the result of an endemic process of silencing (Jones, Kim, & Skendall, 2012). That is, this participant's attempt to conceptualize her leadership as not important is congruent with the status quo of women not taking on a leadership position. Furthermore, unknowingly the participant's conceptualization of leadership identity as *given to her without active effort on her part* may be indicative of tokenism in leadership (Oakley, 2000). Although the type of clinical specialty is not known to be a leadership requirement in medical education and practice (Till et al., 2016), this participant thinks that it was in her experience. This finding is aligned with other research findings that articulate a need for women, unlike men, to be exceptional in order to be leaders in medical education through, for example, increased research production (Carr et al., 2018; Reed et al., 2011); in this instance, it manifests as the participant's clinical specialty.

Additionally, this brings attention to the unique individual experience of leadership women have and the need to contextualize research in this area. Previous research tends to homogenize women leaders (McDade et al., 2008; McLean et al., 2013; Pololi et al., 2010; Pololi et al., 2012). More attention needs to be paid to contextual professional information such as specialty and leadership experience. From this study women seem enabled further by certain professional identities and/or expected to take on roles because of their unique certifications, as a result putting them in a leadership position without necessarily them pursuing such positions. However, the opposite can be argued. Women may face exceptional requirements to become leaders, as discussed above. Despite the reservations by some scholars who see intersectionality as less of a paradigm and more a description of individual experiences (Tong, 2014), the findings of this study show that an intersectional lens can offer

insights into the complex interplay between the various identities that dynamically shape each woman's identity structure at any given time and place.

Women's different identities influenced how they used digital tools. As presented previously, and in agreement with previous studies (Ahlquist, 2014; Ahlquist, 2017), some women used digital tools to reach out to their students, associating digital tools with younger generations. However, in this study women shared that their digital media use extended to include their colleagues, their professional circles, and the broader society. Women's experiences shed light on the different ways women taken on leadership roles in the digital context and the intersection between their different identities. For example, women spoke about the importance of being leaders as health professionals, providing important healthcare information to the wider Saudi community. Other participants saw it was important to use digital tools to influence their learners, highlighting their role as educators. What is not clear, however, is how women choose to take on their different roles online (e.g. health professional versus educator) and what communities they choose to cater to (e.g. wider society versus students).

Participants varied in how they constructed their leadership identities. Understandably, those early in their careers, when constructing their leadership identities, pointed out their lack of skill and areas that were in need of improvement, not unlike participants from another study (Spalluto et al., 2017). Some women referred to their lack of formal leadership training. Unlike women in Western contexts (Dannels et al., 2008; Dannels et al., 2009; McLean et al., 2013; Levine et al., 2015), Saudi women may have less opportunities for leadership development and training. In the United States, programs have been founded with the specific aim of cultivating leadership and training women in leadership theory and skills, such as the ELAM (Dannels et al., 2009) and Johns Hopkins Women's Leadership in academic medicine programs (Levine et al., 2015). The lack of training and focus on leadership may have lead women in this study to perceive themselves as incapable leaders because of their lack of training.

LAM in conjunction with other digital activities seems to give a space for participants where they can exercise influence. Some participants saw digital tools as complimentary to their real-world leadership. However, other participants saw digital tools as competing with their real-world presence, arguing that Twitter and other social media platforms are time-consuming and in conflict with what a leader should be doing (i.e. be present). I think both points of view hold merit. On the one hand, busy health professionals juggle many professional roles e.g. clinical, teaching, research, management and leadership (Pololi et al.,

2012) and may not have the time to utilize digital tools. Additionally, although Twitter is addressed in the medical education literature as an educational tool (Forgie et al., 2013; Melvin & Chan, 2014), how to enact a professional role in digital contexts is currently unaccounted for in the medical education literature. It is therefore important to ask how can a health professional make digital tools part of their professional experience? Furthermore, medical schools and universities may not expect their faculty and employees to be active on digital tools. In the absence of a reward system, women health professionals may not give it as much weight or priority to the incorporation of digital tools in their professional portfolio.

Though few, some participants saw the benefit and necessity of digital tools in complimenting their real-world leadership experience. Women of this study recognized influence through digital tools, however, they struggled with how to navigate the digital terrain. Participants argued that their presence online in itself is influential and demonstrates to their followership (students, colleagues, and general public) that they are open to change. In alignment with transformative feminist perspective, where innovation and development of new ways is encouraged (Batliwala, 2011), both women of this study, those who oppose the use of digital tools, as well as those who support it saw the importance of finding ways to use digital tools for the greater good. In many ways, women in this study could not separate their digital professional efforts from who they are and what they accomplish in their respective professions/organizations. For example, women spoke about the necessity of representing their specialty and institute. Therefore, it is important to develop transformative feminist perspectives, to define further what it means to account for individual and collective values and needs. It is beyond the scope of this study to articulate that. However, this finding exposes an area for future study.

6.5 Contribution to theory

As I mentioned earlier, a novelty of this research is critiquing and showing how feminist theory and scholarship can be utilized in medical education to further our understanding of women's leadership in a Saudi context. First, despite the increased need for feminist paradigms to explain career progression and leadership in the professional context of medical education, such paradigms are not usually explicitly used to understand women's leadership in medical education. I believe this study is the first to review major schools of thought comprehensively when addressing women's leadership in medical education. While my approach was by no means exhaustive, I demonstrate how feminist principles can be used to further our understanding of women's leadership, for example, I point out earlier that

liberal feminism is a school of thought that is commonly yet implicitly used in medical education to frame women's leadership. The use of liberal feminism can narrow our understanding because of its focus on women's access to leadership positions within organizations and their number in such positions. It does not answer more complex questions about how women may influence positive change or how they may enact transformational leadership once in those positions.

Moreover, using an intersectional lens, this dissertation offers a nuanced understanding of how Saudi women in medicine and related health professions may experience the intersections of their identities. As discussed above, through the digital context, women seemed to negotiate the conflict between their competing identities. Women, it seems, expressed their identities as digital users when speaking about their individual or interpersonal experience at the micro level. However, they addressed their professional identities when they spoke about the macro level. This furthers theoretical understanding in that women's intersecting identities are not static matrices of oppression or empowerment. Rather, they are dynamic interactions that are constantly negotiated based on contextual influences.

Furthermore, while scholarship on women's leadership in medical education have focused on Western contexts (McDade et al., 2008; Dannels et al., 2008; Dannels et al., 2009), none developed an approach or method that considers non-Western contexts or indeed took a more global view of women's leadership in medical education. The Middle-Eastern context, now more than ever, requires theoretical understanding in this area. Given the intimate educational relationship between the West and the Saudi Arabian context, especially in medical education, it is vital to begin a conversation on how major feminist ideas may apply or not in a Middle-Eastern context. In this study, I believe I began this conversation. Not all notions presented by feminist scholarship are congruent with organizational culture in a Saudi context. As mentioned previously, there exists a tension between Saudi medical education that draws heavily on Western thought while very much rooted in Islamic thought A hybrid between the two currently informs education and practice. While I don't pose any solutions, I do identify the theoretical limitation.

6.5.1 Conceptual understanding. Oriented by a tiered conceptual framework, I set out to explore women's leadership in a digital context. The initial conceptual framework provided information on the micro, meso, and macro levels embedded in a transformative feminist perspective. Moreover, leadership in a digital context was presented as an adjunct

concept to be explored further in this study. What emerged in this study was a more mature understanding of the complex concepts that I aimed to explore.

Earlier I adopted the well-known leadership definition offered by Northouse (2010): "Leadership is a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). I argued that literature on women's leadership draws on a narrow definition of leadership and that studying leadership through the digital context will allow us to conceptualize leadership as a process. Based on the findings of this study and Northouse's definition of leadership, I conceptualize leadership in a digital context as *an ongoing process of influence that includes innovative thinking and having vision, capacity (necessary skills), and interactive influence*. This definition is different from Northouse's, since it acknowledges the active role followers have in leadership and that digital mediums require a different set of skills – mainly how to communicate through a digital platform. Figure 5 I illustrate the new emerging concepts while in figure 6 I illustrate the emerging definition of digital leadership.
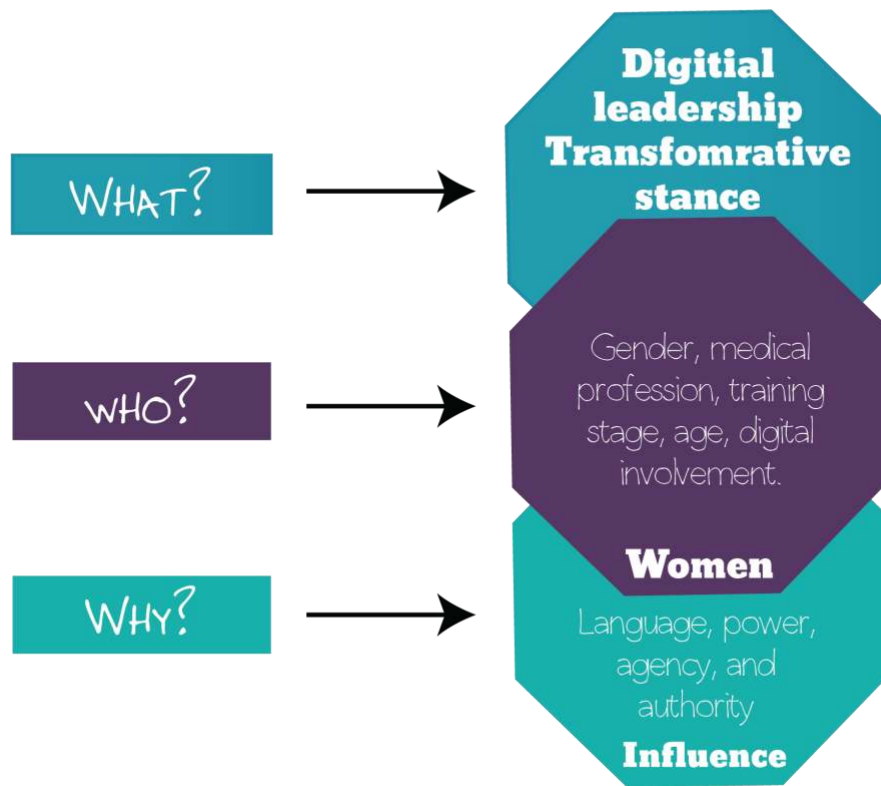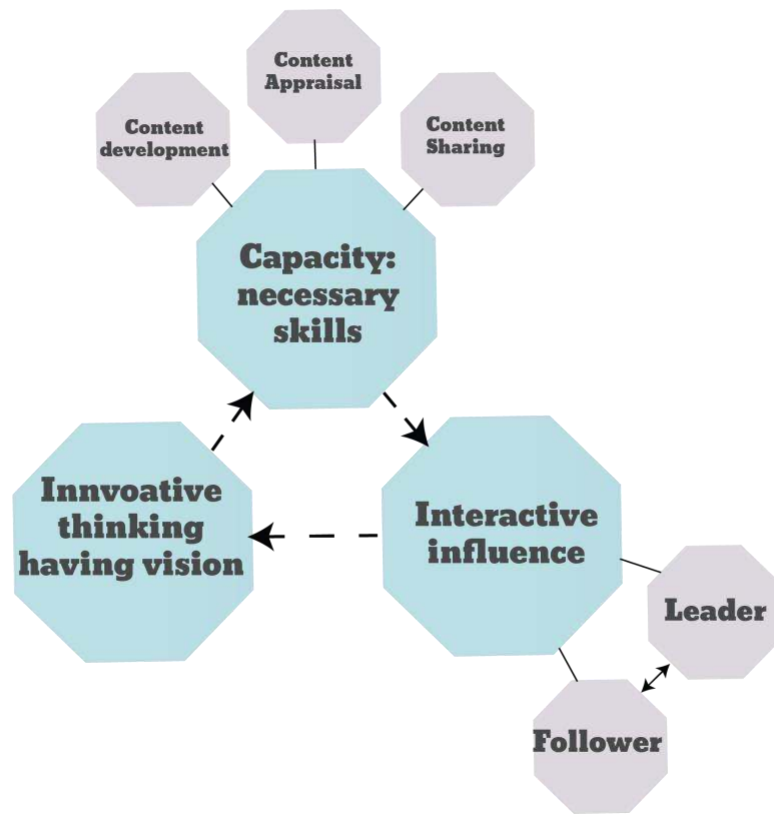
Figure 4 Overlay of concepts

Figure 5 Process of leadership in a digital context

6.6 Contribution to methodology

In this study, I believe I have made contributions to research methodology in three respects: using theory to inform mixed-methodology research, conducting studies in open-source platforms, and translation practices. Through the experience of conducting the present study, I have a contribution to make to mixed method research methodology. This study illustrates how theory can be used to underpin both quantitative and qualitative studies. While I recognize the difficulty of using feminist theory to inform a quantitative study (Westmarland, 2001), I argue that this tension shows how an emphasis on proclaiming one's adherence to a research paradigm, such as positivist and post-positivist, as a taken for granted practice that underpins many of the medical studies conducted in the medical field, is problematic. This issue came to the forefront, when I attempted to establish the commonness of definitions amongst women in phase one and two. Feminism acknowledges diversity of opinion and strives to provide a space for each distinct voice. Therefore, attempting to homogenize and quantify opinions in phase one was problematic, and at odds with the theoretical foundations of this study.

The idea of commonness was complicated further, when it became apparent that I needed to deepen my understanding of how women conceptualized leadership in phase two. In the second phase, the idea of commonness was not presented as a number rather, I gave a general description of *many* and *few* to point out how common any given theme or sub-theme was. However, in phase two, findings were contextualized. Although participants shared a common understanding, they provided individual details that shaped their experiences, illustrating further that even though participants shared similar opinions, they emphasized different points of view. For example, participants mentioned communication skills as an important skill for a leader to have. However, participants differed in how they experienced it. As mentioned previously, some participants emphasized a leader's public speaking skills while others emphasized their listening. This demonstrates the difficulty of applying the concept of commonness to qualitative data.

Another important contribution I believe I have made to methodology is my conduct of a study in an open source platform through the LAM website and affiliated social media accounts. Prior to this study, I would have considered this approach to be less rigorous. However, after conducting this study, I recognize that the approach to data collection was a direct reflection of the population and the fulcrum of the study (the LAM digital initiative). The openness of the digital context prevented me from providing exact data on the population

and how many people interacted with the study advertisements; but, despite this limitation, I used the Twitter followership to determine the population as I explained earlier.

My final contribution to research methodology is the translation of the study instruments. Although I followed best translation practices, which included translating the original from English to Arabic by a professional translator and then back to English by a different translator, I still was not satisfied with the product. Through my experience I found that it was vital for me as the researcher to carry out lengthy discussions with both translators to come to an appropriate translation from the original, this may have been a direct result of the research topic including terminology not often used in research (e.g. digital context). Moreover, through the experience of seeing how an Arabic speaking translator not from Saudi Arabia was unaware of certain terms used by Saudi Arabic speakers, I have come to learn that translators from the community itself may aid in making the study instrument more culturally sensitive.

6.7 Contribution to practice

Although this project was conducted outside of traditional organizational structures, some implications for practice can be drawn from it. Participants provided several insights into certain aspects of their working environments that can be improved for women health professionals who aspire to be leaders. Participants articulated several needs in terms of how to best utilize digital tools. It is important to note that these recommendations are preliminary and are not exhaustive. Furthermore, they need to be qualified based on work environment (academic versus community-based department, private versus governmental universities). The following recommendations are categorized into two sections: recommendations for women health professionals and for medical schools/universities.

For women health professionals, taking an active role in one's career and adopting a healthy attitude towards leadership is necessary for those who wish to advance in their careers. To that end, recognizing one's role in engaging positive organizational change is a pivotal first step. Moreover, engaging with leadership in one's profession and communicating a desire for further advancement as a leader may lead to an important discussion of how to become involved and nominate oneself. Additionally, women health professional may benefit from acquiring leadership knowledge and skills. Women health professionals may wish to advance their understanding by joining leadership development programs or reaching out to an existing leader for mentorship/sponsorship. The most senior participants in this study expressed an interest in mentoring junior health professionals. Therefore, I also recommend

those in a mentoring position to reach out and work with younger colleagues or students to further their development as leaders. It is important to note that LAM and digital initiatives like it can serve as a network for women health professionals. From the findings of this study, LAM seems to transcend physical and certain professional boundaries, introducing women to others with similar interests. There may be an opportunity for peer mentoring to take place through digital platforms. Although it is difficult at this time to outline how digital mentoring can be realized, from the findings it seems that women who are part of the LAM community can foster relationships that may bring benefit to mentor and mentee.

For health professions schools and universities, more efforts are required to engage women as leaders. First, there should be a needs assessment that evaluates the need for women's leadership in medical education. Furthermore, creating pathways where women can advance as leaders is vital. Schools may benefit from establishing leadership training programs for women, in collaboration with schools of education and business. By doing this, medical schools stand to gain a more evidence-based approach to leadership and management development. Finally, universities must develop policies and procedures that address gender equality, promoting healthier work environments that foster diversity and equality.

6.8 Future research

Despite the study limitations, the findings have a number of implications for further research. First, the concept of digital leadership requires further development and a wider-scale exploration, using both quantitative and qualitative methods. In this project, I begin a conversation on how influence might conceptualized in a digital context, however, further work can expand on the manifestation of ideas like hierarchy, power, and authority (very well researched aspects of leadership in traditional organizational literature) in a digital context. Likewise, the concept of influence (which I have explored in a digital context) is less explored within organizational contexts. Future studies may uncover more nuanced understandings by studying aspects of leadership.

Second, understanding women's experiences in a Saudi context requires paying attention to contextual cultural issues, as well as the development of new theoretical paradigms to aid us in understanding how women's leadership may be realized and sustained. While I adopted a stance in this research project, on its own it does not qualify as a theoretical framework. Theoretically, there remains ample work to be done, comparing and contrasting feminist theory in the West with feminist theory and its benefits in the Middle-East. Third, many of the women participants were new to the digital tools they were using; a

longitudinal study would help uncover how women's use may develop over time. Finally, women's leadership identities in academic medicine require further study, both in Saudi and beyond. From this study, I have come to learn that women's identity construction is heavily influenced by their cultural beliefs and how they believe others are perceiving them. Drawing on organizational literature, future studies can shed light on how women leaders see themselves in medical education. Such knowledge can provide better methods of identifying and cultivating leadership amongst women.

6.9 Conclusion

From previous exploration of women's leadership in academic medicine (Alwazzan & Rees, 2016), I have found that there is scarcity in leadership opportunities and the experiences of women have been rife with cultural and institutional barriers. Upon these findings, in this project, I expanded the scope and took a feminist stance that encourages transformation as opposed to adjustment (Ferguson, 1984). As a result, the LAM initiative was utilized. The objective of LAM is supporting health professionals with their roles as leaders, educators, and researchers. The website includes a wealth of articles, infographics, and podcasts that address various topics and issues in medical education. The website is inclusive, focusing on the individual and group alike. It seeks to empower the community that engages with it. Women, in particular, were active, participating in the discussions and content creation. Writing for the website, and taking part in the weekly discussions. This drew my attention to how women can take on leadership roles within a digital context.

In this dissertation, I have reported a mixed method study, I undertook as a requirement of the PhD program. Through the LAM initiative, I queried women health professionals who are part of this community on how they may come to realize a form of leadership in a digital context and gain influence in medical education. Through a questionnaire, in phase one I sought to explore women's common understandings of leadership in a digital context. I found that women agreed to much of the Likert items developed on the basis of the literature findings, but were not likely to characterize their involvement with LAM as a turn for influence. Exploring this in more depth, in phase two, I asked women about the reasons that encouraged them to seek influence or not through LAM. I also, asked women about their perceptions of influence and identity development as a result of their interactions with LAM. I found women to want influence but deterred themselves from it for several reasons including their perceptions that digital tools were difficult to use and may be perceived by others as unprofessional. However, women also shared the many ways they use digital tools

on their own or through LAM to adance their leadership and increase their influence on their immediate professional circle or the broader society.

From this study, I conclude that women health professionals in Saudi Arabia have unique leadership experiences from those experienced by women in a Western context. Furthermore, at a time where efforts to empower women are growing in Saudi Arabia, it is vital that women themselves take part and become actively involved in these efforts as well. Women must recognize their leadership potential, taking part in positive societal change to overcome the challenges that come with gender inequality.

The work that has been done thus far on women's leadership comes from Western contexts (Valantine et al., 2014; Carr et al., 2003; Rochon, Davidoff, & Levinson, 2016; Allen, 2005; Brown, Swinyard, & Ogle, 2003; Carr et al., 2000), and is informed by Western feminist views. Although those works are beneficial and are an extraordinary body of work, it gives us very little towards understanding leadership and gender in medical education in Saudi context. Thus, a need arises for the exploration of different contextual leadership models and solutions. An important and maybe even overlooked strategy is studying digital media use as an emerging form of leadership. As I have demonstrated in this dissertation, there is much potential in examining the role of digital tools in empowering women's leadership. The LAM initiative and findings from this project, provide a promising way forward for women.

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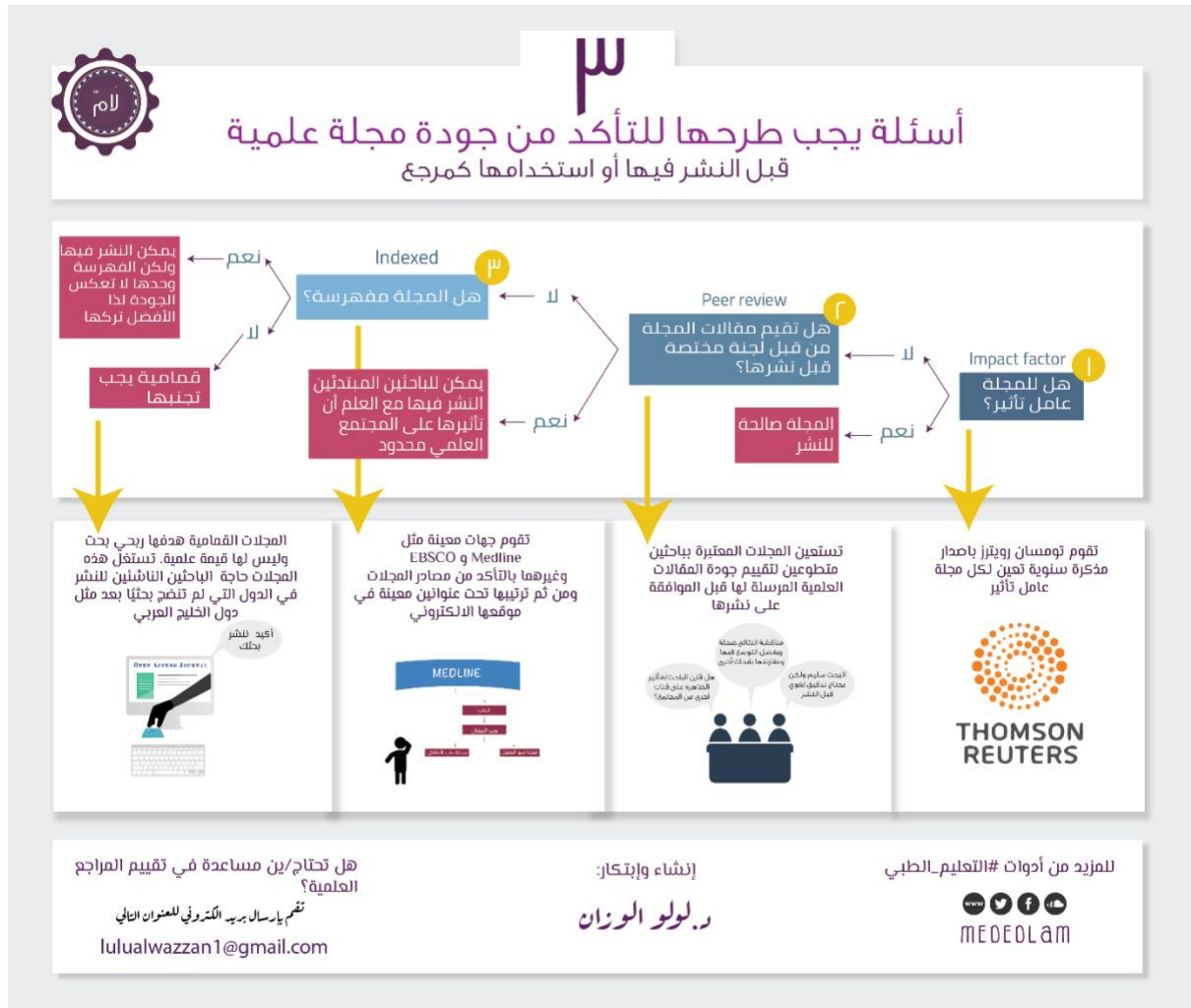
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Appendix A: Website snapshot

A screenshot of the LAM website homepage. From top to down, the snapshot elements include the website navigation bar, banner, and links to the 4 most recent posts contributed by different authors. The links to posts are mini-images that are unique to each article and the first few lines of the article. The website snapshot is meant to give the reader an idea of what women participants experience when visiting the website.

A sample infographic outlining 3 important questions to ask before publishing in a scholarly journal. The questions are from right to left: 1) What is the impact factor? 2) Is the journal peer reviewed? 3) Is the journal indexed? Below each question are snippets that expand on the research question.

Appendix C: Initiative hyperlinks

Website	https://mededlam.com/
Twitter Account	https://Twitter.com/mededlam
Twitter Hashtag	https://bit.ly/2V7wZnQ
Podcast	https://soundcloud.com/user-638909364
Infographics	https://bit.ly/2Cze65Q
LAM Writers	https://bit.ly/2AiwluQ

Appendix D: Examples of participation

A snapshot of discussions conducted on Twitter.

Appendix E: Research plot

Main research questions		Data Source
Phase one **Quantitative**	*What are common understandings Saudi women health professionals hold about their leadership in a digital context?*	Questionnaire
Phase two **Qualitative**	*Why have women turned to LAM to exercise influence in their profession?*	Interviews
Phase two **Qualitative**	*How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession?*	Interviews

Appendix F: Search strategy

Step one: Determining appropriate databases

Database used for the literature review were based on the key databases provided under subject area: medicine on the University of Ottawa library webpage, Available at: https://biblio.uottawa.ca/en/databases/medicine After consulting with Lindsey Sikora the Health Sciences Librarian and Michelle Brown the Education Librarian. The following databases were deemed most beneficial in finding articles relevant to this research project.

Database	Description
Embase	The Excerpta Medica database (EMBASE) is a major biomedical and pharmaceutical database indexing over 3,500 international journals.
Medline OVID	source for biomedical scholarly literature and research—with easy linking to full-text journals.
CINAHL	This database provides indexing for 2,928 journals from the fields of nursing and allied health.
PsycINFO	Includes journal articles, books, book chapters, dissertations and government reports in psychology and related disciplines.

Phase two: Search in each database for key concepts

EMBASE search strategy and citation results

Iteration one: Broad search using keyword variations for each concept		
Women	#	*1*
	Keywords	*Women* OR *woman* OR *female* OR *females* OR *girl* OR *girls*
	Citations	6820008
Leadership	#	*2*

	Keyword	*Leadership OR Leader OR leaders OR leading*
	Citations	486715
Medical Education	#	*3*
	Keyword	*Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development*
	Citations	43405
Iteration two: Narrow search by selecting the overlap between the three main concepts		
Women and Leadership and Medical education	#	*4=1+2+3*
	Keywords	*(Women OR woman OR female OR girl) AND (Leadership OR Leader OR leaders OR leading) AND (Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development)*
	Citations	1773

MEDLINE Ovid search strategy and citation results

Iteration one: Broad search using keyword variations for each concept		
Women	#	*1*
	Keywords	*Women OR woman OR female OR females OR girl OR girls*

	Citations	1327472
Leadership	*#*	*2*
	Keyword	*Leadership OR Leader OR leaders OR leading*
	Citations	7055301
Medical Education	*#*	*3*
	Keyword	*Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development*
	Citations	633880
Iteration two: Narrow search by selecting the overlap between the three main concepts		
Women and Leadership and Medical education	*#*	*4=1+2+3*
	Keywords	*(Women OR woman OR female OR girl) AND (Leadership OR Leader OR leaders OR leading) AND (Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development)*
	Citations	760

CINAHL Search strategy and citation results

Iteration one: Broad search using keyword variations for each concept		
Women	*#*	*1*

	Keywords	*Women* OR *woman* OR *female* OR *females* OR *girl* OR *girls*
	Citations	1,025,331
Leadership	#	*2*
	Keyword	*Leadership OR Leader OR leaders OR leading*
	Citations	92841
Medical Education	#	*3*
	Keyword	*Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development*
	Citations	56901
Iteration two: Narrow search by selecting the overlap between the three main concepts		
Women and Leadership and Medical education	#	*4=1+2+3*
	Keywords	*(Women* OR *woman* OR *female* OR *girl) AND (Leadership OR Leader OR leaders OR leading) AND (Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development)*
	Citations	601

PsysINFO Search strategy and citation results

Iteration one: Broad search using keyword variations for each concept		
Women	#	*1*
	Keywords	*Women* OR *woman* OR *female* OR *females* OR *girl* OR *girls*
	Citations	527998
Leadership	#	*2*
	Keyword	*Leadership OR Leader OR leaders OR leading*
	Citations	143606
Medical Education	#	*3*
	Keyword	*Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development*
	Citations	43527
Iteration two: Narrow search by selecting the overlap between the three main concepts		
Women and Leadership and Medical education	#	*4=1+2+3*
	Keywords	*(Women* OR *woman* OR *female* OR *girl) AND (Leadership OR Leader OR leaders OR leading) AND (Medical education OR Academic medicine OR health professions education or health profession education OR professional development OR faculty development)*
	Citations	401

Appendix G: Workflow
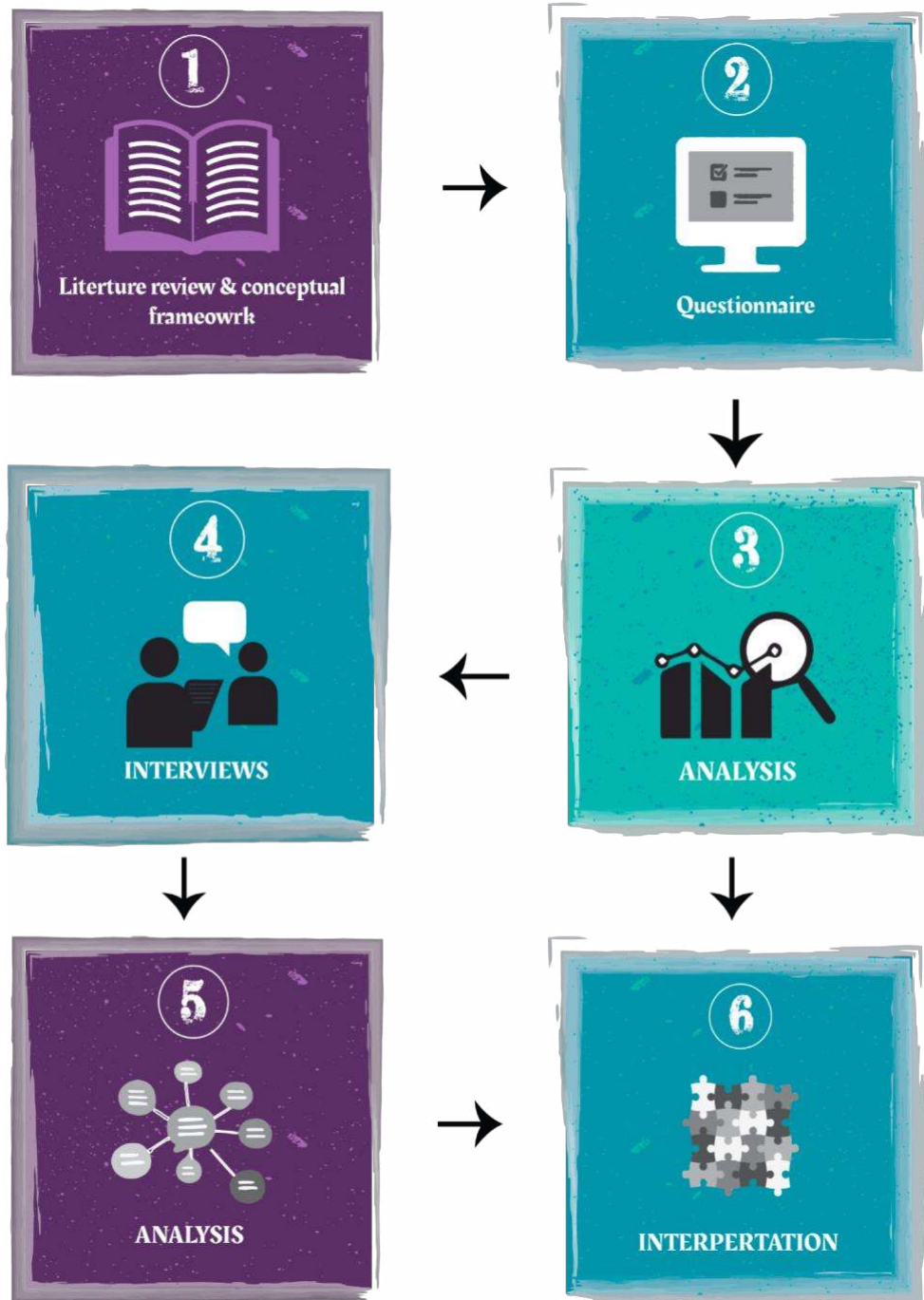
The six phases of the research method in the order they were conducted.

Appendix H: Phase one instrument

I would like to invite you to complete this survey and share your understandings of leadership in a digital context. For this research project, I have identified leadership as the ability to lead others in a digital context that would include competencies in digital literacy, scholarship, and communication. The following items reflect this definition.

Part A

Please indicate your level of agreement or disagreement with each of these statements regarding your understanding of leadership in a digital context. Place an "X" mark in the box of your answer.

A leader in a digital context is someone who …					
	Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know
can influence followers' opinions.					
can influence followers' practices online.					
can influence followers' practices in their daily professional life.					
can find useful information on the Internet.					
can find useful information in research articles.					
can evaluate information found on the Internet such as blogposts and website articles.					
shares knowledge in an open-source platform (e.g. Mededlam.com website).					

challenges traditional ways of thinking.				
can come up with innovative ideas.				
is skilled at disseminating knowledge through social media platforms.				
inspires others to share digital content.				
has a vision.				
shares power with others.				
takes the cultural context of their audience into consideration when developing digital material.				
can debate trends relevant to niche community.				

Part B

Please answer the following questions by circling the appropriate answer.

What does the digital context mean to you? select all that apply

- · A virtual space that require an electronic device to gain access to.
- · Social media platforms such as Twitter and snapchat.
- · A virtual space where digital media such as images, video, podcasts can be accessed.
- · Websites such as mededlam.com

Do you have leadership experience in your professional environment?

·   No, I do not.   ·   Yes, I have leadership experience

                                    Specify………………………….

Why are you a part of the LAM initiative?

· Because it provides medical education content that I'm interested in learning about it.

· Because it provides information in Arabic

· Because I recognize the opportunity of influence I might have being a member of this digital community

· Other……………………………………………………………………………………

What digital platforms do you use? Choose all that apply

· Twitter	· Facebook	· Soundcloud
· Path	· Vimeo	· Instagram
· Youtube	· Snapchat	· Other……..

In terms of personal versus professional use, how would you describe your social media activity?

· Personal use only	· Professional use only	· Personal and professional use
· Depends on the social media platform		

What is your age?

· 18-24 years	· 25-34 years	· 35-44 years
· 45-54 years	· 55-64 years	· 65 years or older

What is your health profession?

| · Medicine | · Nursing | · Dentistry |
| · Medical sciences | · Pharmacy | · Other…………. |

What is your professional status?

| · Practicing health professional | · Resident | Registrar |
| · University student | · Other…………. | |

Are you a faculty member at a health profession school?

| · No, I'm not. | · Yes, I'm Specify…………………………. |

What is your country of residence?

| · Saudi Arabia | · United Arab Emirates | · Canada |
| · Kuwait | · USA | · Other…………. |

What is your country of nationality?

| · Saudi Arabia | · United Arab Emirates | · Canada |
| · Kuwait | · USA | · Other………. |

If eligible, would you be interested in participating in a follow up semi-structured interviews for this study?

| Yes, please contact me at (insert email) | Maybe, send me additional information at (insert email) | No |

Thank you for completing this questionnaire

Appendix I: Debriefing questionnaire

Please tell me your thoughts about this survey. Please be honest! Your feedback will help me improve the survey-taking experience for our future participants. Please consider the following statements and indicate whether you agree or disagree with each. Thank you for your help!

	Yes	**No**
The answers provided in this survey reflected my opinions.		
I found this survey interesting.		
I felt the survey was an acceptable length.		
The survey questions were clear.		
I would recommend this survey to my colleagues.		

Do you have additional comments? Please share them

Appendix J: Ethical approval

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

S-11-17-183 - REG-183 - Certificat d'approbation éthique / Certificate of Ethics Approval

(Please scroll down for the English version)

Cher/Chère Lulu Alwazzan,

Veuillez trouver le certificat d'approbation éthique pour le projet intitulé : Women in medical education: A mixed method exploration of emergent digital leadership .

Le certificat est valide jusqu'au : 19-12-2018

Si vous avez reçu une subvention pour le projet de recherche, veuillez faire suivre une copie du certificat d'approbation éthique au Service de gestion de la recherche à http://research.uottawa.ca/rms/about .

Si vous avez des questions, n'hésitez pas à communiquer avec le bureau d'éthique à ethique@uottawa.ca   ou en composant le 613-562-5387.

Vous pouvez voir votre demande en vous connectant à votre compte eReviews.

Très cordialement,

Gabriel Petitti

Responsable d'éthique en recherche

Ceci est une réponse automatisée, merci de ne pas répondre à ce courriel.

Dear Lulu Alwazzan,

Please find attached the certificate of ethics approval for your research project entitled: "Women in medical education: A mixed method exploration of emergent digital leadership ".

This certificate is valid until: 19-12-2018

A reminder that if you received a grant for this research, you must provide a copy of your ethics certificate to Research Management Services at http://research.uottawa.ca/rms/about.

If you have any questions, please contact the Ethics Office at ethique@uottawa.ca   or by telephone at 613-562-5387.

You can view your project at any time by logging into eReviews.

Best regards,

Gabriel Petitti

Protocol Officer

This is an automated message. Please do not reply directly to this email.

Attachement(s) / Attachment(s)
approvalLetter1513796295108.pdf

550, rue Cumberland, pièce 154   550 Cumberland Street, Room 154
Ottawa (Ontario) K1N 6N5 Canada   Ottawa, Ontario K1N 6N5 Canada

☎ 613-562-5387 • 🖷 613-562-5338 • ✉ ethique@uOttawa.ca / ethics@uOttawa.ca
www.recherche.uottawa.ca/deontologie | www.recherche.uottawa.ca/ethics

Appendix K: Phase one invitation email

Dear Madam,

As part of my PhD studies at the University of Ottawa I am conducting a project that explores women's leadership in a digital context within medical education.

Women's leadership and their career advancement is a pivotal factor in their success on an individual and collective level. Participating in this research allows for documentation of current steps taken towards women empowerment. Moreover, my study helps female medical professionals become aware of alternate formats where gender equality can be addressed.

You have been invited to participate in this study because you are a women medical professional who is active online and part of the LAM community.

Participants will take part in an online questionnaire that typically requires 10 minutes to complete. You will be encouraged to share your own understanding of leadership in a digital context and its potential role in women's empowerment.

Results of the project will be published but any data included will be anonymized.

If you are interested in participating, please use the following link to reach the survey.

<Link>

Thank you for considering my request.

Sincerely,

Lulu Alwazzan | MD MMEd

University of Ottawa

Appendix L: Phase one advertisement

Appendix M: Participant information sheet

Primary investigator: Dr. Lulu Alwazzan, Faculty of Education, University of Ottawa. Phone: 613-581-6618 Email: lalwa035@uottawa.ca.

About this form: As a woman in medical education, who has interacted with the LAM initiative, your input is important and much appreciated. Thank you for your willingness to take part. As you may have questions about the study and your participation, additional information is provided below, including how to contact me and the university.

What is the study's purpose? 1) Examines Saudi Arabian women's common understandings of their leadership in a digital context. 2) Investigates why women have turned to LAM to exercise influence in their profession. 3) Explores women's opinions regarding their online interactions on LAM, including how those opinions have influenced their leadership identities and professional influence.

What does participation involve? Your involvement would consist of taking part an online survey. You will be encouraged to share your understanding of leadership in a digital context. Everything that you share will be kept anonymous. While I will be reporting the findings in general, personal confidentiality will be maintained, except for circumstances where it is likely to cause harm to you or to others. Please be aware that you may decide not to take part in the project without explanation and without any disadvantage to yourself of any kind. Consent will be obtained implicitly by your filling out the questionnaire and submitting it. Your willingness to participate in phase two interviews and contact details will be solicited at the end of phase one. After the analysis of phase one, if you have indicated your willingness to take part in phase two you will be contacted. Interviews will be held by telephone or Skype at a time convenient for you.

Your participation is voluntary and you may withdraw from the study at any time and/or refuse to answer any questions, without any consequences to you. If you decide to withdraw, all data gathered until the time of withdrawal will be destroyed.

What are the risks and benefits of participating? There are not likely to be any risks from participating. I hope that this study will contribute to the knowledge base on women'

leadership. It may provide an opportunity for you to reflect on and discuss women's influence and leadership in digital context with the researcher, which may generate meaningful insights.

How will your privacy be protected? Your participation will remain strictly confidential. All information gathered in the questionnaire will be accessible only to me and my supervisor. Your identity will be protected through the use of pseudonyms for the names of all individuals, initiatives/programs, organizations and geographic locations in any texts that result from this study (e.g., narrative summaries, research publications and presentations). Furthermore, only generic organizational titles will be used (e.g., professor, manager, student, volunteer). In spite of these safeguards, however, there remains a risk that your initiative may be unique or distinctive enough that well-informed observers may deduce its identity (and possibly your identity) in the reporting of findings.

Confidentiality and conservation of data: The information gathered will be stored on password-protected computers and servers for the duration of the study, and securely stored for seven years afterward in a locked cabinet.

<div align="center">

Invitation to complete the questionnaire.

</div>

Thank you for willing to participate in the study. **By filling out and submitting the questionnaire you signify your consent to participate in this study.**

You are invited to print a copy of the consent form for your files. Please find the link to the questionnaire at: HYPERLINK to questionnaire

Contact information:

Principal Investigator: Dr. Lulu Alwazzan.

If you have any questions about the study, you may contact me by email at lalwa035@uottawa.ca ; by telephone at 613-581-6618.

If I have any questions about the ethical conduct of this study, you may contact the Office of Research Ethics and Integrity, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: [613] 562-5387, Email: ethics@uottawa.ca

<p style="text-align: center;">**Appendix N: Phase two interview guide**</p>

Participants and inclusion criteria: Women who answered "yes" to Q2 (in part B of the survey) that asked: "Do you have leadership experience?" Candidate pool of 35 women based on women who expressed interest in being interviewed (at the end of the survey).

Scenario: 60-75 min. semi-structured interview.

A) Warm up/Intro:

· Thank you for agreeing to being interviewed, I greatly appreciate your time. Do you have any questions before we begin?

· Could you please tell me about your job and where you work?

B) Interview questions (mapped to RQs, dimensions, and with identified links to Phase one Survey findings, were appropriate):

Thesis RQ	Dimensions	Link to phase one	Interview questions
1. What are common understandings Saudi women health professionals hold about their leadership in a digital context?	*Saudi women health professionals' understanding of leadership in their profession*	*Expanding(depth) on answers to Q2-part B*: "Do you have leadership experience?"	As you know, this study is about women's leadership in medical education in the Saudi context. As a starting point, **I'm wondering what the term "leadership" means to you in your profession?** (Prompt: What actions get referred to as "leadership"? Who is seen to be a "leader"? Why?) In the survey you responded that you have leadership experience (i.e. on Q2: do you have leadership experience?). **Please tell me more about your leadership experience.** In particular, how does your leadership as a woman manifest in your professional working environment? (Prompt: Please provide examples).
	Saudi women health professionals' leadership in in/through digital contexts	Not linked to a specific item on questionnaire, rather it is an opportunity to allow participants to explain, in their own words, the manifestation of their leadership in a digital context beyond themes addressed in questionnaire: Digital literacy, scholarship and communication	**In what ways does your use of digital tools and media (such as those associated with LAM) help you exercise leadership in your profession?** Similarly, how does your engagement in online communities (such as LAM) help you exercise leadership?
	Saudi women health professionals'	*Expanding on responses to items 2 and 3 under digital communication*	In the survey, women leaders like yourself agreed that leaders in a digital context can influence others'

	influence in/through digital contexts	*theme:* Item 2 – "A leader in a digital context can influence followers' practices online" Item 3 – "A leader in a digital context can influence followers' practices in their daily professional lives."	practices online and can use digital tools to influence followers in their daily professional lives. **Why is having an influence on others' practices through online channels (such as LAM) important to you professionally?** **How do you use digital tools and media to influence others' practices in your professional working environment?** (prompt: Please provide examples?)
2. Why have women turned to the LAM project to have influence?	*Saudi women health professionals' motivations for seeking influence through LAM*	*Expanding on responses to Q3 in Part B: "Why do you follow LAM?"* Multiple Choice 3: "Because I recognize the opportunity of influence I might have being a member of this digital community."	*For participant who responded "yes":* In the survey you said you follow LAM, in part, because it represents an opportunity for you to have influence. **Why is having influence important to you professionally? And why did you turn to LAM to help with this?** *For participant who responded "no":* When asked in the survey why you follow LAM, you responded "no" to an item that read: "Because I recognize the opportunity of influence I might have being a member of this digital community". **Could you please elaborate why you responded negatively to this item?**

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	Facilitators to Saudi women health professionals' influence through LAM	Not directly linked to findings of phase one, rather questions are developed to answer RQ2, thus expanding in breadth of topic.	**How have your experiences with LAM provided opportunities for you to have influence in your profession?** (prompt: Please provide concrete examples.)
	Barriers to Saudi women health professionals' influence through LAM		**How have your experiences with LAM not provided opportunities for you to have influence in your profession?** (Prompt: Please provide concrete examples.)
How have women's online interactions on LAM affected their leadership identity and perceptions of influence in their profession?	*Saudi women health professionals' interaction with LAM community*	Not directly linked to findings of phase one, rather the questions were developed to answer RQ3, expanding on breadth of research topic.	**How have you interacted with the LAM project?** (Prompt: e.g. Read material, discussed or wrote material on the website, what about social media channels e.g. Twitter?)
	Saudi women health professionals' perceptions of influence as a result of interactions in LAM community		**In what ways have your interactions on LAM affected how you see yourself as being influential in your profession?**
	Saudi women health professionals' perceptions of their leadership identity as a result of interactions in LAM community		**In what ways have your interactions on LAM allowed you to exercise leadership in your professional working environment? How have these experiences affected how you see yourself as a leader?**

Appendix O: Phase two ethics modification

uOttawa

Project Overview

Project Overview

Ethics File Number:	S-11-17-183
Project Title:	Women in medical education: A mixed method exploration of emergent digital leadership
Is there a pending deadline by which ethics approval is required?	○ Yes ● No

Project Type

Project Type:

- ○ Professor's research project
- ○ Clinician's research project
- ○ Postdoctoral research project
- ○ Resident's research project
- ● Doctoral thesis
- ○ Master's thesis
- ○ Master's major research paper
- ○ 4th-year project
- ○ Independent student project
- ○ Other

For PhD and MA theses, please append a copy of the thesis committee approval. For programs where there are no thesis committees or formal approval procedures, append the "Confirmation of Methodology" form signed by your supervisor.

Filename	Size
PhD-Proposal_Approval_Form.pdf	51.0 KB

Please provide any additional information that may be relevant for the ethics review of this project (e.g., relationship to another approved project, etc.). (optional)	Because the oral hearing on this project was held on Oct 31 and it is being submitted to REB for Nov 1 deadline, the attached thesis committee approval form has all committee members' signatures but not that of the Graduate Director, who was not available to sign the form by submission deadline.

Research Team

Principal Investigator : Lulu Alwazzan

Position/Status:	Student / Étudiant / Étudiante
Departement/Unit:	
Faculty/Unit:	Faculty of Education
Institution/Organization:	University of Ottawa

Appendix P: Phase two invitation email

Dear Madam,

As part of my PhD studies at the University of Ottawa I plan to conduct a project that explores women's medical professionals' leadership in a digital context.

Women's leadership and their career advancement is a pivotal factor in their success on an individual and collective level. Participating in this research would allow documentation of current steps taken towards women empowerment. Moreover, it would help female medical professionals become aware of alternate formats where gender equality can be addressed.

You have been invited to participate in phase two of this study because you have indicated your willingness to do so in prior communications.

We thank you for your interest in this research project. Participants will take part in a 30-45 semi structured interview.

You will be encouraged to share your influence in a digital context and your opinion on how LAM has influences your leadership identity and professional practice.

Results of the project will be published but any data included will be anonymized.

If you are interested in participating, please contact me at lalwa035@uottawa.ca

Thank you for taking the time to read this email.

Sincerely,

Lulu Alwazzan | MD MMEd

University of Ottawa

Appendix Q: Phase two participant information sheet

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether to participate.

If you decide to participate I thank you. If you decide not to take part, there will be no disadvantage to yourself of any kind and I thank you for considering my request.

What is the aim of the project? This study aims to explore Saudi Arabian women medical professional's leadership in a digital context. By investigating this novel area, women's achievements in medical education can be documented.

What type of participants are needed? Women of all medical backgrounds and stages, training or working as medical professionals in medical colleges or facilities in Saudi Arabia will be invited to participate in this study. A medical student, resident, practicing physician, educator who has an active digital presence, precisely, a level of engagement with mededlam.com website.

What will participants be asked to do? In this phase of the project, participants are asked to take part in a single semi-structured interview. You will be encouraged to discuss why women have turned to Mededlam.com to exercise influence in medical education, and your opinion on how it may influence your leadership identity and professional practice. Everything that you share in the interview will be kept anonymous and, while I will be reporting the findings in general, personal confidentiality will be maintained.

Can participants change their mind and withdraw from the project? You may withdraw from participation in the project at any time, without explanation and without any disadvantage to yourself of any kind. If you choose to withdraw after participation, your data will be excluded in the final analyses.

What data or information will be collected and what use will be made of it? 1 The interviews will be audio-recorded. The audio files will then be transcribed and fully anonymized. Only direct members of the research team (Dr Lulu Alwazzan and Dr Peter Milley) will have access to the data. Results of this project may be published but any data

included will be anonymous. The data collected will be stored securely in such a way that only those mentioned above will can gain access to it. The raw data will be destroyed 7 years after the study has been published in accordance with research governance guidelines.

Are there any advantages or disadvantages to participating in the study? There are not likely to be any risks from participating. I hope that this study will contribute to the knowledge base on women' leadership. It may provide an opportunity for you to reflect on and discuss women's influence and leadership in digital context with the researcher, which may generate meaningful insights.

How will the interviews of phase two be administered? The semi-structured interview will be conducted in person, over the phone, or audio/video-conference. This project involves an open-questioning technique where the precise nature of the questions, to be asked have not been determined in advance, but will depend on the way in which the interview develops. Consequently, although the Ethics Board is aware of the general areas to be explored in the interview, the Board has not been able to review the precise questions to be used. If the line of questioning does develop in such a way that you feel hesitant or uncomfortable you are reminded of your right to decline to answer any question(s). You may also withdraw from the project at any stage without explanation and without any disadvantage to yourself of any kind.

Who will conduct the interview? The interview will be conducted by Dr Lulu Alwazzan, a physician and PhD candidate at the University of Ottawa.

What if participants have any questions? If you have any questions about our project, either now or in the future, please feel free to contact: Lulu Alwazzan
Email: LALWA035@uottawa.ca

Appendix R: Phase two consent form

Primary investigator: Dr. Lulu Alwazzan, Faculty of Education,

University of Ottawa. Phone: 613-581-6618 Email: lalwa035@uottawa.ca.

About this form: As a woman in medical education, who has interacted with the LAM initiative, your input is important and much appreciated. Thank you for your willingness to take part. As you may have questions about the study and your participation, additional information is provided below, including how to contact me and the university.

What is the study's purpose? 1) Examines Saudi Arabian women's common understandings of their leadership in a digital context. 2)Investigates why women have turned to LAM to exercise influence in their profession. 3) Explores women's opinions regarding their online interactions on LAM, including how those opinions have

influenced their leadership identities and professional influence. What does participation involve? Your involvement would consist of taking part in a single semi-structured interview. You will be encouraged to discuss why women have turned to LAM to exercise influence in medical education, and your opinion on how it may influence your

leadership identity and professional practice. Everything that you share during the interview will be kept anonymous. While I will be reporting the findings in general, personal confidentiality will be maintained, except for circumstances where it is likely to cause harm to you or to others.

After the analysis of phase one of this study, if you have indicated your willingness to take part in phase two you will be contacted. Interviews will be held by telephone or Skype at a time convenient for you. With your permission, interviews will be audio-recorded to ensure the accuracy of the information collected. A summary transcript of the interviews will be made available to you. Please be aware that security of a transcript sent by email cannot be guaranteed.

Your participation is voluntary and you may withdraw from the study at any time and/or refuse to answer any questions, without any consequences to you. If you decide to withdraw, all data gathered until the time of withdrawal will be destroyed.

What are the risks and benefits of participating? There are not likely to be any risks from

participating. I hope that this study will contribute to the knowledge base on women'
leadership. It may provide an opportunity for you to reflect on and discuss women's influence
and leadership in digital context with the researcher, which may generate meaningful
insights.

How will your privacy be protected?

Your participation will remain strictly confidential. All information gathered in the
interviews will be accessible only to me and my supervisor. Your identity will be protected
through the use of pseudonyms for the names of all individuals, initiatives/programs,
organizations and geographic locations in any texts that result from this study (e.g., narrative
summaries, research publications and presentations). Furthermore, only generic
organizational titles will be used (e.g., professor, manager, student, volunteer). In spite of
these safeguards, however, there remains a risk that your initiative may be unique or
distinctive enough that well-informed observers may deduce its identity (and possibly your
identity) in the reporting of findings.

Confidentiality and conservation of data: The information gathered will be stored on
password-protected computers and servers for the duration of the study, and securely stored
for
seven years afterward in a locked cabinet.

Acceptance:

□ I, _____[Name of participant], agree to participate in
interviews and a site visit, as described above.

□ I, _____[Name of participant], agree to audio
recording of
the interviews.

Contact information:

Principal Investigator: Dr. Lulu Alwazzan.

If you have any questions about the study, you may contact me by email at
lalwa035@uottawa.ca ; by telephone at 613-581-6618.

If I have any questions about the ethical conduct of this study, you may contact the Office of
Research Ethics and Integrity, University of Ottawa, Tabaret Hall, 550 Cumberland Street,
Room 154, Ottawa, ON K1N 6N5

Tel.: [613] 562-5387, Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is yours to keep.

Participant's name Signature:

Date:

Researcher's name Signature:

Date:

Sincerely,

Dr. Lulu Alwazzan

Faculty of Education

University of Ottawa

lalwa035@uottawa.ca

Appendix S: Interview logs

Interview Code	Interview Length	Interview Date	Interview Medium
F1	75 min	July 10th, 2018	Via telephone
F2	55 min	July 11th, 2018	Via telephone
F3	51 min	July 13th, 2018	Via Skype
F4	62 min	July 13th, 2018	Via Skype
F5	57 min	July 14th, 2018	In person
F6	60 min	July 16th, 2018	In person
F7	80 min	July 17th, 2018	In person
F8	71 min	July 19th, 2018	In person
F9	52 min	July 20th, 2018	In person
F10	64 min	July 21st, 2018	In person
F11	55 min	July 22nd, 2018	In person
F12	60 min	July 24th, 2018	Via telephone
F13	57 min	July 27th, 2018	In person
F14	60 min	Aug 1st, 2018	In person
F15	55 min	Aug 7th, 2018	In person

Appendix T: Phase two thematic framework

1. **Demography: The study samples professional characteristics.**

   1.1. **Specialty:** Participant's career specialty.

   F1: "My specialty is Public Health and now I am categorized in the Saudi Commission for Health Specialties as Preventative Medicine"

   F7: I am a medical resident in the Pathology department in X [Name of hospital] specialist Hospital in C city"

   F2: "I specialize in Hematology and Oncology in the medicine department in K University.

   F5: "I am a clinical pharmacist, I'm in my third year of residency"

   F8: "I am an ENT specialist"

   1.2. **Career phase:** This code groups participants into 3 emerging career phases, based on how participants presented themselves.

   1.2.1. **Early-career**

   F6: "I am currently a Demonstrator at K University Hospital, in the beginning of my career"

   F11: "I am a fresh graduate specialised in laboratory Medicine"

   F15: "I recently joined as Demonstrator at K University."

   1.2.2. **Mid-career**

   F5: "Yes, I am an anesthesiologist medical registrar...I finished my training"

   F14: "I am currently an assistant professor in medical school and am the director of the blood bank in the hospital."

   1.2.3. **Late career**

   F9:" I'm a family medicine consultant, working in the department that is founded to educate the community...I have took on several leadership positions in my career"

   Educational experience: Participants educational credentials.

   Education in Saudi

   F11: "I graduated from K University in C city."

   F13: "I've graduated from K University."

   F14: I've graduated from Z University, in L city."

   1.3. **Educational experience:** Participants educational credentials.

1.3.1. Education in Saudi

F11: "I graduated from K University in C city"

F13: "I've graduated from K University."

F14: I've graduated from Z University, in L city"

1.3.2. Overseas experience

F3:" I am currently in my last year of my doctoral studies at Y University, in S [Western country]"

F8: "I'm now completing my studies abroad in S [Western country]"

F2: I've just finished the internal medicine residency in the D [Western country]"

1.4. Educational role: Participants educational role in their organization.

F1: "Part of my job is to train the interns."

F5: "We teach undergrads and occasionally Master's students."

F6: "I teach medical students."

F15: "So, I teach third, fourth and fifth year students in the clinic, and I am also a course director of the fourth year student's course."

F8: "When I was a course director, it was a very good experience as it allowed me to be more reflective, and identify my weaknesses."

2. Saudi women health professionals' understanding of leadership in their profession

2.1. The who is a leader

2.1.1. leadership as individual

F4: "Leadership is when *someone* has an active role"

2.1.2. Leadership as inherent

F6: "There are *naturally born* people with good leadership but it can be something that is taught."

2.1.3. Leader as gender neutral

F7: "I don't see that me being a woman has anything to do with taking up a leadership position."

2.1.4. Leader as experienced

F12: "When you say leadership it's someone who's gone through enough knowledge to guide others."

2.2. The *how* of leadership

2.2.1. Leadership as authoritative

F9: "You have to tell people what to do in leadership."

2.2.2. Leadership as shared decision-making

F2: "You must allow your team to do their work and make decisions."

2.2.3. Leadership as sharing power

F14: "Leadership should be sharing the power and spotlight with your team, they have to make decisions also, you are not always there."

2.2.4. Leadership as preparation

F9: "Leadership is that I prepare myself, and the group I'm working with to meet the objectives we have set."

2.2.5. Leadership as empowerment

F14: "As a leader it is your job to make others feel like they can do it."

2.2.6. Leadership as problem-solving

F13: "How to manage the ward and the nurses and what to do in case of problems how to safeguard the rights of the patients as well as the doctors."

2.2.7. Leadership as management

F9: "You have to know how to manage people."

2.2.8. Leadership as being active

F6: "Leadership is taking a role and leading a group of people to a path."

F9: "I feel that a good manager has to develop themselves to become a leader."

F8: "Leadership is using a position of power to influence change in an institution."

F13: "Leadership is taking the reins on matters."

F15: "Leadership is when you're supposed to inspire your group."

2.3. Leadership with the Profession

F1: "Leadership is different depending on the field."

F2: "To be a leader in medicine you have to be a good physician with good practises and a good base."

F3: "I think leadership as a concept is the same across all medical fields."

F8: Leadership would be easier if there was a clearer definition in terms of the medical field, they would be able to quantify the outcome."

2.3.1. Situational leader:

F5: "Being the leader depends on what the situation you're in"

F5: "I've been in situations where I was appointed a leader on short notice."

F7: "When I took up leadership positions, it taught me to become more flexiable and patient. "

F14: "Leadership can differ depending on what the profession is."

2.3.2. Leadership as qualification

F15: "It doesn't matter if it's male or female that's holding the leadership position, so long as he or she is qualified."

F2: " I have to be able to understand what quality it and get a better understanding of it before I through myself in."

2.4. Skills
2.4.1. Communication

F1: "The most important skill is communication, it's the first step to achieving the ultimate goal."

F4: "A leaders must have communication skills that are well developed."

F8: "A person's communication skills must be very important. "

F7: "I need to work on my communication skills more."

2.5. Grooming future leaders

F9: "There are people that we're grooming for leadership roles. We teach them about administration, and how to become a leader."

2.6. Understandings of leadership
2.6.1. Good leadership

F9: "Appointing the right woman can save homes and ministries."

2.6.1.1. Delegating
F9: "Leadership is that I don't control their work."
F9: "Leadership is that they can carry on their work even if I'm not there."
2.6.1.2. Management
F2: "You have to have good administrative skills."
F3: A leader's vision is clear to him and all those he leads."
F8: "It's very inspiring to be able to provide tools for people to move forward."
F12: "When you say leadership it's someone who's gone through enough knowledge to guide others."
F13: "Typically speaking the person who becomes the leader is the highest ranking person among the group."

2.6.2. Bad leadership

F9: "Appointing a woman who is not fit for leadership in that position is catastrophic."

F13: "There are some leaders who compare between their juniors, and that is wrong they're not creating a good work environment."

F13: " When treating a patient, my superior told me to treat her for something minor that she did notwant treated, I did notfeel comfortable doing so to which he replied with if the other doctor were here he would do what I want."

2.7. Identifying leaders

F9: "People who surround a person can tell if they are a leader or not. First and foremost, they have to be influential. It's not a task you perform, and that's it."

F15: "People often think that leaders are born when in fact leadership among other attributes can be learned."

2.8. Behaviors

F11: "A good leader would know what the appropriate conduct is."

F2: "To be a leader, you have to be more of an administrator and less of a clinician."

F8: "a leader would get people to work together to achieve something and get an outcome and resolve conflict between colleagues."

F7: "a leader must be convinced of his idea and be confident in order to complete his ultimate goal"

F7: " Often times than not a leader is able to satisfy the needs of all his followers, as well as get them all to carry the same idea in mind."

2.9. Process

F1: "I have to be willing to step up, and I guide people, and people need to be willing to let go of their ego and problems and follow me."

F3: the leader must take care to identify and aim to achieve long term goal."

F10: "The way to lead would be different depending on who you're leading."

2.10.   Gender: This code addresses how women spoke about gender as it pertains to their profession and leadership.

2.10.1. Gendered leadership

F3: "Being a female hasn't hindered my taking up leadership roles."

F3: " I don't think it matters if the leader is a man or woman, the qualities of a leader are the same."

F4: " I find that women are better at knowing the issues but in terms of leadership men are better."

F5: "I find that women are more likely to take on leadership roles when compared to men."

F6: "Had women been appointed in leadership positions, our department would be less hostile."

F6: "if given the opportunity to be in a leadership position, I would take it just to prove them wrong."

F7: "Being a female leader in the workplace makes a difference, there just isn't much confidence in females as there are for males. "

F15: " The private sector is now aiming to appoint women in leadership positions."

2.10.2. Barriers to women leadership

F9: "Hear say and what people say affects women leaders. Women are affected by this."

F9: "What people say about women leaders affects our moral, even online, and this is often discouraging to the point that it makes you want to quit."

F9: "Some people try to tear down all the work you do, and everything you put out there."

2.10.2.1.   Stereotypical expectations of women

F15: "We only treat females and only teach females, we don't teach males."

F5: "It's difficult for a woman to be as equally available as a man, considering that she might want to have kids in the future."

F9: "Some people expect women to be more lenient."

2.10.2.2. Male leadership

F7: "Where I work, I've noticed that the administration does not give way to discriminate between men and women, we are all expected to do the same tasks and no special treatment is given to me because I'm a woman."

F7: "I find that if a female was the leader of a project people would not react as greatly as if it it were lead by a male."

2.10.2.3. Gendered culture

F6: "The high ranking positions are all being held by men."

F4: I find that the senior staff would encourage us as women but they would use tough love of males."

F14" They might not be very happy with the concept of a woman leading."

F5: Women tend to be more detail oriented, whereas men focus on end results."

F15: "I don't really think there are any obstacles in front of women."

F13: "I have struggled a lot with males when delegating to them, they don't do what I ask and often times would ignore me and ask my superior."

F15: "It seems that the public sector is not quite accustomed to the idea of a female leader yet."

2.10.2.3.1. Gender and specialty

F5: "I can say with confidence that a female [leader] does a better job in Pharmacy than a man because she is more meticulous."

F6: "I find that females outnumber males in the Internal medicine department."

F13: "Females prefer this field over others."

F13: "The number of females that choose this speciality are increasing."

2.11. **Culture:** The values and beliefs that underpin the organizational culture.

2.11.1. Organizational culture

2.11.1.1. Masculine culture

F6: "They [males] might even feel that it is just fun they're bickering but we [females] see it as hostile and that's unhealthy."

F6: "Had there been more females in the department, they [males] would take care to be more mild mannered."

F6: "Why do I have to be more masculine to fit in their world?"

2.11.2. Culture of exclusion

F3: "Had there been encouragement to take leadership roles during training, I would have taken more roles."

F15: "No one ever applies to leadership positions because we never know that they're vacant."

2.11.3. Hierarchical culture

F15: "You can affect greater change if you were in a higher leadership position."

2.11.4. Hostile culture

F6: "Men think in a different way, like the cardiology department, it's extremely hostile."

F6: "It was so common for them [men] to badmouth their coworkers."

F6: "When he was explaining the physical appearance of the patient he referred to me as reference to how skinny the patient was, that was unprofessional."

F6: "These practices of aggression are common practice,everyone does them."

F6: "There are females that are young and taking leadership positions that are powerful and the her male colleagues are resentful."

F6 : "I think the best way to deal with it is to not let them put you down and give it time."

F6: "They [males] will try to put you down because they're afraid that you will be better and people would favor you over them. "

2.11.5. Unhealthy competitiveness

F6: "People don't want to show the good aspects of their work because they don't want you to compete with them."

F6: "The male colleagues don't view it as competitiveness but rather females are taking their jobs."

2.12. Setting work priorities

F5: "In my specialty they focus on administrative roles more rather than clinical training."

F15: "My objective when beginning to teach in the college was to facilitate a communication line between faculty and students."

2.12.1. The need for change

F6: "The culture needs to change and it is changing."

2.12.2. Gender neutrality

F7: "Where I work, I've noticed that the administration does not give way to discriminate between men and women, we are all expected to do the same tasks and no special treatment is given to me because I'm a woman."

F13: "In recent times, gender no longer factors in as a deciding factor."

F14: "I don't see a difference between men and women in terms of leadership."

F15: "If a qualified female were to be appointed in a leadership position she would be accepted as a leader especially now."

2.13. Saudi culture

F6: "The culture needs to change and it is changing."

F5: "Because you are a woman and you've completed this task the product is better than what a man could've done."

F13: "Taking care of how to approach the matter is extremely important, you have to go about it with care and respect regardless of how you're speaking to."

3. **Saudi women health professionals' leadership in in/through digital contexts:** This code encompasses what tools women use and how they use them as educators and leaders in their respective professions.

3.1. Uses of digital tools

3.1.1. Educational tool

3.1.1.1. With medical students

F4: "These tools are easily accessible and can be used to teach."

F2: I would respond to inquiries about exams with three page answers."

F7: "I've used a blog to educate students on medical school."

F15: "Using Twitter to connect with my students really broke the ice."

3.1.1.2. With the broader public

F9: "Our job -with regards to awareness- is provide information on these tools."

F1: "We have previously used social media tools to teach the community about viruses.

F7: "Instagram helped me educate people about my speciality."

F9: "If you are online and follow accounts that promote healthcare promotion and awareness, you benefit. If you don't, you miss out."

3.1.1.3. With colleagues

F9: "I find that these tools [social media] have a return value. We get so many questions on the Instagram and Snapchat account, asking about how they can take the workshops we offer such CPR or Life-Savers. This is proof that people are reading. People are engaging."

F6: Individual efforts are appreciated and they resonate."

3.1.2. Must be evidence-based

F4: "I only recently began using digital tools and it made such a positive impact on my career, I read more about my specialty and that makes me a better professional"

F6: "I've noticed that a lot of our consultants are on Twitter and they're advertising what they do on Twitter and it actually works. I have to start using it too"

3.1.3. Social vs. professional use

F8: "I truly believe using these platforms in a professional manner should be completely separated from their social uses."

F9: "I share all relevant content for health promotions on the official Twitter and Instagram account of the project. I don't use my personal account to share such content. It's more for my personal social use."

F15: "When I first started using digital tools it was mainly for social purposes and only when I noticed that my students started following me, I began using it professionally."

4. Saudi women health professionals' motivations for seeking influence through LAM

4.1.1. Tool benefits

F9: "These tools don't even cost a thing, at all."

F9: "If used well, these tools are amazing."

F8: "Social media has an appeal to the new generation, and it's more casual, so whatever barriers that exist with face-to-face interactions aren't there."

F8: "Social media makes me and a lot more people approachable."

F8: "They're [Digital tools]overwhelmingly positive if used correctly"

F15: "I've been posting on Twitter content that I wanted my students to benefit from."

4.1.2. Tool demographics

F9: "I noticed that our demographic is mainly the young and middle-aged age group. My guess is that they range in age from 25 to 65. Men and women. From what I see, they're educated -even if it's only basic reading or writing. The ones that we believe to be illiterate and don't engage on with us on social media, we visit them physically through field visits."

4.1.3. Influence: This code encompasses the ways in which women influence others in and outside organizations.

4.1.3.1. The extent of influence

F1" it's a double edged sword, the influencer has to be careful with their message and needs to take care that his message is refined and well thought through."

F8: "Influence in social media does not necessarily relate to your position in real life."

F15: "I think my influence would be greater if i were to hold a hire leadership position."

4.1.3.2. influence of leader to follower

F5: "I like that the leader is doing something, it inspires me, I would love to do it one day"

F6: "My senior showed me that I can still be feminine and at the same time be efficient and as good as anyone in the room."

4.1.3.3. influence of follower to leader

F5: "It's good to be a follower to other people so you can be a good leader."

4.1.3.4. Influence with organization

F9: "Although we weren't require to, we took workshops in CPR so the trainees would be better informed."

F9: "I am better preparing my trainees, so when they go out in the real world to promote health they would have practical experiences alongside the theoretical knowledge."

4.1.3.5. Influence without organization

F9: "When I'm training the community, the impact is greater than training undergraduates."

F9: "We found that when we were working on the surveys, we the community was quite responsive."

F9: "We are expanding and fostering new partnerships with other organizations."

F9: "Through Twitter, we noticed that a lot of new organizations are trying to partner with us, and this shows that there is a great positive influence."

F9: "We see the effect these partnerships have on society."

5. Facilitators to Saudi women health professionals' influence through LAM

5.1. Digital tools as facilitators to career

5.1.1. Aids in communicating with students

F1: " Students have used digital tools to communicate with me and share their ideas about various projects."

F15: "With the development of technology It's easier to communicate with the entire student body."

F15: "The relationship between students and instructors has changed for the better in the past 10 years."

6. Barriers to Saudi women health professionals' influence through LAM

6.1.1. Tool challenges

F9: "The hardships and challenges are many. The least of which is when someone goes on holiday and they're managing the account, they don't delegate. Then the account [social media] becomes stagnant, and dies down a bit. It needs a lot of follow up. Can't be left unattended."

F9: "People have to follow the accounts to see the content. If they don't, then they miss out."

F8: "The anonymity that a lot of people choose when using social media might prompt them to use it in a negative way."

F8: "Human interaction has to do with body languages and when you're completely having interactions in a digital world might get lost."

F9: "There are people online who are bossy. But we just ignore them."

6.1.1.1. Censorship

F9: "One of the negative things about social media, is that there are people -who with all do respect- are not respectful and use inappropriate tones and language. With these people, it's best to ignore. If it reaches a point where they are vile and extremely inappropriate, we block them because we don't want our readership to view such comments."

F15: "Having colleagues and students following me made me filter the content I was posting on my Twitter account."

6.1.2. Digital tools as hindrances to career

F2: "Twitter is difficult to use because it there's no way to know who is doing what."

F2" "Digital tools help me reach out to others in my field, but I don't think it is a professional tool, Twitter is not a long term tool, it's not a solid base to stand on."

F4: "I don't think using digital tools have any negative effects."

F6: "I believe social media you can just say whatever you want it doesn't reflect who you are but it's been proven it's a good way to reach people."

F9: "If you don't have digital tool presence, you appear less than. Not like your colleagues who are up to up-to-date with current events."

7. Saudi women health professionals' interaction with LAM community
7.1. Opportunity
F14: "It is a place where I can meet other people, people I wouldn't in my everyday work, but on this platform I can."

7.2. Novel initiative
F5: "LAM made me aware of medical education as a discipline, before I thought education was something that people just knew how to do."

7.3. A necessity
F8: "I think at this stage it [digital tools] are mandatory, you have to adapt to the new generation, and this is an integral part of their day to day lives."

8. Saudi women health professionals' perceptions of influence as a result of interactions in LAM community
8.1. Roles: This code encompasses how women take on their professional roles and how they report others perceive them.
8.1.1. Role as leader

F14: " I am willing to help people reach what they can."

F2: " would like to think I am, I have certain attributes that would make me valuable in leading other people."

F15: "I aspire to take up leadership roles later in my career because I want to positively change things."

8.1.2. Role as manager

F9: "I worked for 9 years as the manager of the family medicine program."

8.1.3. Role as transition

F9: "I transitioned from one role to another. First, I earned an MBBS degree. Then, I enrolled in the Kuwaiti Board for family medicine. Then, I became a trainer in family medicine. After that, I became an examiner in family medicine. Then, I was appointed as the manager of family medicine program. Then, I became the Chairwoman of Primary Care. "

8.1.4. Role as health professional

8.1.4.1. Role as ENT physician

F8: "There is a strong presence of some of the academics of ENT on social media, most of the people who are well known academics everyone knows their accounts."

8.1.4.2. Role as family medicine physician

F9: "I am a doctor. I am a family medicine consultant."

8.1.5. Role as a trainer

F9: "I've worked for quite a while in training."

F9: "I give a number of training programs, but they're not quite academic. More general."

8.1.6. Role as educator

"F2: I was kind of taking lead in their orientation process in the hospital."

F4: "I am able to teach people and identify when I need to simplify information and when to go into detail."

F9: "When I was in the Ministry of Health, I trained undergraduates."

8.1.7. Role as administrator

F9: "After that, I took on the role of Director of Health Promotion which is the department that takes care of health awareness."

F9: "Our role online is to help guide them, and inform them about how to register for the workshops and training."

9. **Saudi women health professionals' perceptions of their leadership identity as a result of interactions in LAM community**

9.1. Identity: The way in which women see themselves and how they construct their different identities with a specific focus on how they intersect with women's leadership identities.

9.1.1. Identity as leader

F1:" I don't see myself as a leader, I still have skills I need to improve."

F4: I don't think I am yet able to hold people accountable for their missteps."

F5: "I see in myself the potential to become a leader, I have the skills and the knowledge needed."

F6: "I believe I have leadership qualities."

F7: "I do consider myself a leader in terms of the guidance of students."

F9: "I see myself as a competent leader."

F9: "Before I embark on anything, I perform a SWAT analysis on myself. I evaluate my strengths, weaknesses, opportunities, not every opportunity may be suitable for me, then I look at the threats. I always use it."

F9: "Leadership to me has always been leading myself first. I've never viewed it as a position."

F9: "I have skills that I utilize such as training."

F9: "I don't care about positions. I care about making people better."

F15: "consider myself a good leader, I know how to deal with students."

9.1.2. Identity as woman

F5: "being a female is helping me rather than putting me down."

F9: "a woman is at the heart of her home and work."

F9: "I find that people who do not recognize a woman's leadership role are the ones who usually miss out the most."

9.1.3. Identity as Muslim

F9: "There were various women leaders dating back to the Prophet's time."