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Perspectives of Women in Orthopaedic Surgery on Leadership Development

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Perspectives of Women in Orthopaedic Surgery on Leadership Development

by

Ann Joyce

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Curriculum and Instruction
with a concentration in Higher Education Administration
Department of Leadership, Counseling, Adult, Career and Higher Education
College of Education
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DEDICATION

This work is dedicated to my children. "You are the wind beneath my wings."

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I would like to thank three important groups of people, without them this dissertation would not have been possible: my committee, my family, and my friends.

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ABSTRACT

Over the past 50 years, the demographics of medical school graduates in the United States has changed dramatically with the number of women (47%) almost equaling the number of men in 2014 (AAMC, 2014). However, the Association of American Medical Colleges (2014) reports that orthopaedic surgery has the lowest proportion of female residents, instructors, assistants, associate, and full professors of all the sub-specialties and little has changed in the past several decades.

Due to the healthcare reform and the changing needs of our society, it is importance to recruit, retain, and promote women into leadership positions. The purpose of this study is to ensure the success of women in orthopaedic surgery.   A self-report survey was sent to all known women in orthopaedic surgery. The survey assessed perspectives of women in orthopaedic surgery in regards to organizational culture, leadership development, challenges, diversity, gender bias, recruitment, and retainment.

An examination of the data provides insights into areas of improvement and implications for institutional practice. The results indicated that although institutions are making progress, more advocacy for gender equality, pro-family policies, and employee retention is needed.

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CHAPTER ONE:

INTRODUCTION

Introduction of the Problem

The purpose of this study is to examine the perspectives of women in the field of orthopaedic medicine on leadership development. For this study we will define a leader as a female orthopaedic surgeon with an academic rank. While women leaders in other academic programs such as pediatrics (assistant professor 4,557/57% female) and neurology (assistant professor, 805/44% female) have increased, women leaders in orthopaedic medicine (assistant professor, 229/19% female) have remained relatively the same since 2001 (AAMC, 2012).

The advancement of women into leadership positions in academic medicine is unsatisfactory compared to their male colleagues, especially in the field of orthopaedic medicine (Mankin, 1999). The Association of American Medical Colleges (AAMC) Group on Women in Medicine and Science (GWIMS) (2013-2014) report confirms that 47% of medical school graduates are women, yet less than 14% of those female graduates enter into an orthopaedic residency program. The report reveals that orthopaedic surgery has the lowest proportion of female residents, instructors, assistant, associate, and full professors. A review of the last fifteen years reveals that women leaders in orthopaedic academic medicine have remained relatively unchanged (GWIMS, 2014). This study will provide a critical lens through which professionals can

understand and address the needs of women in academic orthopaedic medicine as well as create leadership programs to advance women in orthopaedic surgery.

Brief History of Women in Medicine

The demographics of medical school graduates in the United States has dramatically changed since the 1800's (AAMC, 2014). In 1765, The Academy and Charity School of Philadelphia was the first medical school to be founded in the United States. To be accepted into medical school a candidate was required to have a bachelor's degree, be fluent in Latin, mathematics, natural sciences, and philosophy. Additionally, the candidate must have been at least 24 years of age and defended a thesis. Last and most importantly, the candidate must have been male (McConaghy, 2010). It was not until eighty years later that the first woman was accepted into a medical school program.

In 1849, with much resistance, Elizabeth Blackwell, M.D. was the first woman to receive a medical degree (Lo Chen, 2002). She opened the door for thousands of other women to enter the field of medicine. Although the door was opened, women continued to be excluded from many institutions, medical schools, and societies (Lo Chen, 2002). Seventy five years later, in 1924, the first orthopaedic residency program was established in the United States, The Campbell Clinic (Retrieved February 12, 2016).

Less than a decade later, in 1932, Ruth Jackson, M.D., became the first practicing female orthopedic surgeon in the United States (RJOS, Retrieved February 12, 2016). Not only was she the first woman to be certified by the American Board of Orthopaedic Surgery, but she was also the first woman to be admitted to the American Academy of

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Orthopaedic Surgeons (AAOS, 2014). With a promising start for women in academic orthopaedic medicine, it is a mystery why this surgical specialty now lags behind all other specialties in recruiting and promoting women into residency and leadership positions (Daniels, French, Murphy, and Grant, 2012).

Today the demographics of medical schools have almost an equal number of male and female graduates, 47% female (AAMC, 2013). According to AAMC Medical Students Roster from 1965 – 2012 (201), 524 women graduated from medical school in 1966, which is approximately 6.9% of the total enrollment. In 2013, 8,576 women graduated from medical school, which is approximately 47.5% of the total enrollment. Yet, only 544 (1%) female residents represent orthopaedic medicine in 2013 (AAMC, 2013). Additionally, little is known about that status of women in academic orthopedic medicine (Tosi & Mankin, 1998)

Conceptual Framework

A critical theory context will direct this study. The researcher will use a critical theory lens to focus on social issues such as inequality and power (Creswell, 2013). This study will add to and support research-based strategies that leaders can use to increase women's leadership roles in academic medicine. This research will highlight three critical needs: the need to hear the female orthopaedic surgeon's perspective, the need to identify policies and social support as experienced by women in academic medicine, and the need for women leaders to transcend the issue of perceived barriers that women face when pursuing promotion or tenure in orthopaedic medicine.

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This study hopes provide information that will assist women in their efforts to transcend the barriers they face in their profession (Cresswell, 2013). However, deeper analysis is needed to develop stronger policies for women leaders in academic medicine. Feminist theory-driven questioning will not only inform gender equality issues, it will petition these issues be included in institutional policies (Marshall, 1998). For the purpose of this study, the goal is to search for quality practices that support women leaders in academic medicine.

Problem Statement

The available data does not reveal an increase in women leaders in orthopaedic academic medicine (AAMC, 2014). Although GWIMS (2014) data reveals a reasonable increase in women leaders in academic medicine, it does not show this same increase for women in orthopaedic medicine. With the continuing increase in our population's demographic profile, numerous groups have expressed a need for diversity in all realms of the medical field to reflect and understand the varied ethnic and cultural backgrounds of the United States (Kundhal & Kundhal, 2003). Medical schools desire to have a racially, ethnically, and socio-economically diverse student population (Kundhal & Kundhal, 2003 and Daniels, French, Murphy, & Grant, 2012). This includes the enrollment of women. In fact, the most dramatic demographic change in medical schools was the influx of women into the profession in 1970, shortly after the passage of Title IX of the Higher Education Act (England & Pierce, 1999 and Lo Chen, 2002). However, women continue to experience barriers and career obstacles in obtaining

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leadership positions in academic medicine, especially in the field of orthopaedic surgery (Daniels, French, Murphy, & Grant, 2011).

The Group on Women in Medicine (2013-2014) confirms that 47% of medical school graduates are women, yet orthopaedic residency programs have the least gender diversity at 13.8% female representation. Bickel et al. (2002) concluded that several benefits have been observed when institutions cultivate women leaders, not only in orthopaedic surgery, but in all subspecialties. These benefits include, improved marketing efforts for the institution, additional healthcare provider options for patients, an increased number of role models for students and residents, enhanced institutional creativity, and an enriched institutional culture (Bickel et al., 2002). The bottom line is that institutions that recruit, retain, and promote women into leadership positions have a lot to gain (Bickel et al., 2002).

The Need

Although, physicians are not trained to be leaders per se, they find themselves in leadership positions for the welfare of their patients, education of students, and social responsibility (Bachrach, 1996). Today, academic medicine needs all the leaders it can develop and this includes the development of women leaders (Bickel et al., 2002). The American Academy of Medical Colleges (AAMC), The American Association of Orthopaedic Surgery (AAOS), and the Group on Women in Medicine and Science (GWIMS) recognize that there is a deficient number of women in academic orthopaedic medicine to support our diverse nation. Over the last two decades several societies have worked towards improving the number of women leaders in academic medicine

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(Bickel et al., 2002). One of the first in orthopaedic surgery was Ruth Jackson, M.D., who founded her own society to support female orthopaedic surgeons (RJOS, Retrieved February 12, 2016). The AAMC founded GWIMS to address gender equity, recruitment, retention, and career advancement (Bickel et al., 2002).

The findings of several research studies report a lack of women leaders in orthopaedic surgery, yet the knowledge developed from these studies failed to increase the number of women in this field (Bickel, et al., 2002, Daniels, et al., 2011, and Tosi & Makin, 1998). Women only account for 15% of medical school chairmen, yet there are no women chairmen in orthopaedic academic medicine reported (AAMC, 2013-2014). Women account for 56% of the faculty in pediatric departments and only 16% of the faculty in orthopaedic departments. This is a representation of the high and low end of the physician faculty spectrum in academic medicine (AAMC, 2013-2014). Mankin (1999), and England and Peirce (1999) stated that by diversifying medicine, minority groups [citizens] in America will be better represented. Teuscher and Cannada (2016) stated that women bring a different perspective to the treatment of orthopaedic patients. Based on these findings there is a pressing need to diversify the field of orthopaedic surgery. Through a focused self-report survey, this study will examine the perspectives of women leaders in the field of orthopaedic surgery.

Significance of the Study

This research will investigate the perceptions of women leaders in orthopaedic medicine about issues that have been described as being related to the low number of women in the field. A barrier that this research hopes to address is the significance of

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the United States Medical Licensing Exam (USMLE) Part One in recruiting orthopaedic candidates (Thomas, 1999). A review of data reveals that women score slightly lower than men on the USMLE, yet there is no correlation between test scores and residency performance (Thomas, 1999). Despite this finding, orthopaedic residency programs continue to put a significant amount of emphasis on the USMLE Part One score, while reviewing candidate applications (Thomas, 1999). Due to barriers such as this, the number of women remain relatively low in the field of orthopedic medicine.

Tosi and Mankin's (1998) research study revealed six areas for improvement of women leaders in orthopaedic medicine: (1) increase mentoring, (2) overcome gender bias, (3) reduce women's social and professional isolation, (4) support promotion and equal salary (5) provide accommodations for family, (6) and expand recruitment efforts. The implementation of these ideas needs to be reexamined. Additional research needs to be done to evaluate women's perspectives in these areas. The results may be used to inform women leaders in orthopaedic medicine (Tosi & Mankin, 1998 and Bickel et al., 2002).

Bickel et al., (2002) discuss AAMC's Women's Leadership Project initiatives to increase the number of women in leadership positions, such as, improving faculty diversity, targeting professional development needs, assessing institutional practices, enhancing search committees for women, and supporting the AAMC's Women in Medicine Program. Yet, little improvement has been made in the number of women leaders. This study will re-examine each area of improvement to increase women

leaders. The following is a brief outline of the areas that will be focused on. These will be reviewed in-depth in the literature review.

Mentoring For Women

Mentoring is a career development resource for both men and women. A mentor can be a key element to success (Sanfey, Hollands, and Gantt, 2013). However, women claim to receive inadequate mentoring and perceive it to be an obstacle to academic achievement (Scheckel, 2008). It has been recommended by Sanfy, Hollands, & Grant (2013) that chairpersons develop mentoring programs within the department, provide travel funds so young academicians can broaden their network, and or help encourage women to join orthopaedic support groups like Ruth Jackson Orthopaedic Society. Additionally, it is suggested that by increasing the number of female faculty in a program might increase the interest of female medical students applying to orthopedic residents (Jagsi, et al., 2014).

Gender Bias

Women are still treated unequally in the medical profession; from being denied training on surgical procedures to less opportunity for advancement into leadership roles within an academic department (Biermann, 1998 and Tosi & Mankin, 1998). Baldwin, Namdari, Bowers, Keenan, Levin, and Ahn (p. 919, 2011) state, "Perceptions and attitudes regarding orthopaedic surgery must be changed to attract the best and brightest minds, regardless of sex." Recommendations include gender sensitivity training, increasing mentors, and creating an anonymous tip line for concerns (Gebhart, 2007).

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Social and Professional Isolation

Social and professional isolation arises when women are excluded from activities in which their male colleagues are invited to, but they are not (Tosi & Mankin, 1998). Social activities, outside of the work setting, allow professionals to make informal connections with colleagues. This can be essential to academic achievement (Dussault, Deaudelin, Royer, & Loiselle, 1999).

Promotion and Equal Salary For Women

The gender pay gap exists in practically every profession in the United States as well as in academic medicine (Ash, Carr, Goldstein, and Freidman, 2004). Female surgeons stated that they receive lower salaries than their male colleagues even though they have completed the same training, see the same number of patients, publish the same amount of papers, and perform the same number of surgeries (Jagsi, Griffith, Stewart, Sambuco, DeCastro, & Ubel 2014).

Accommodations

Even though raising a family is perceived as an obstacle from male colleagues, women report that it is not an obstacle to their academic pursuits (Boulis and Jacobs, p. 8). However, there are many opportunities institutions can provide to enhance family work life for both men and women (Boulis and Jacobs, p. 8).

Recruitment

Despite the increase in the number of women graduating from medical school, there remains a disparity in the number of women in orthopaedic academic medicine (Porucznik, 2008). It is recommended that practitioners review the research on what

other surgical programs have done to successfully increase the recruitment of women (Bickel, Wara, Atkinson, Cohen, Dunn, Hostler, Johnson, Morahan, Rubenstein, Sheldon, & Stokes, 2002).

Research Questions

Although GWIMS focuses on the inclusion of women in academic medicine, this study will analyze the culture of women in orthopaedic surgery and focus on the following areas of improvement: mentoring, gender bias, social and professional isolation, promotion, equal pay, accommodations, and recruitment. This report may provide information that will assist an institution in developing a foundation for the advancement of women in orthopaedic medicine.

Questions Regarding the Perspective of Women in Orthopaedic Surgery on Leadership Development:

A. Practices for women in orthopaedics should be implemented at the institutional level.

Research Question 1: In what ways do female orthopaedic surgeons feel institutions support the development of women leaders?

B. Practices that women in orthopaedics medicine should consider challenges expressed throughout the profession.

Research Question 2: In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional

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isolation, promotion and equal salary, accommodations, recruitment and retainment?

C. Practices for women in orthopaedics medicine should offer guidance and support for leadership development.

Research Question 3: In what ways do female orthopaedic surgeons feel institutions are effective at maintaining supportive environments, so that women can develop into leaders?

D. Practices for women in orthopaedic medicine should offer a work-life balance that satisfies both women's ambition and lifestyle.

Research Question 4: Are female orthopaedic surgeons satisfied in academic medicine?

The research questions for the study have been developed based on a review of the available literature on the topic. Analysis of these questions may help an institution facilitate the development of women leaders in academic orthopaedic medicine.

Table 1. Research Question Sources

Research Questions	Source
Practices for women in orthopaedics should be implemented at the institutional level. RQ 1. In what ways do female orthopaedic surgeons feel institutions support the development of women leaders?	Literature/Survey
Practices for women in orthopaedics medicine should consider challenges expressed throughout the profession.	Literature/Survey

Table 1. (Continued)

Research Questions	Source
RQ 2. In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics? • What has the field of orthopaedics done to increase mentoring for women? • What has the field of orthopaedics done to overcome gender bias? • What has the field of orthopaedics done to reduce women's social and professional isolation? • What has the field of orthopaedics done to support promotion and equal salary for women? • What has the field of orthopaedics done to provide accommodations for women and their families? • What has the field of orthopaedics done to improve recruitment of women? • What has the field of orthopaedics done to improve the retainment of women?	
Practices for women in orthopaedics medicine should offer guidance and support for leadership development. RQ 3. In what ways do female orthopaedic surgeons feel institutions can maintain supportive environments so that women can develop into leaders?	Literature/Survey
Practices for women in orthopaedic medicine should offer a work-life balance that satisfies both women's ambition and lifestyle. RQ 4. Are female orthopaedic surgeons satisfied in academic medicine?	Survey

Limitations

A condition that the researcher could not control in this study was the sample

selection. The researcher forwarded a link to the survey to all known chairman in

orthopaedic surgery, then requested that the chairman to forward the survey to all

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known female orthopaedic surgeons. The researcher cannot guarantee that the true audience completed the surveys.

Definition of Terms:

Association of American Medical Colleges (AAMC): Founded in 1876 and based in Washington, D.C., the Association of American Medical Colleges (AAMC) is a not-for-profit association representing all 141 accredited U.S. and 17 accredited Canadian medical schools; nearly 400 major teaching hospitals and health systems, including 51 Departments of Veterans Affairs medical centers; and 90 academic and scientific societies. Through these institutions and organizations, the AAMC represents 148,000 faculty members, 83,000 medical students, and 115,000 resident physicians.

Accreditation: A process by which an institution's (e.g. school of medicine) programs, policies, and practices are reviewed by an external accrediting body to determine whether professional standards are being met (Association of American Medical Colleges, 2015).

American Council of Graduate Medical Education (ACGME): The Accreditation Council for Graduate Medical Education (ACGME) is a private, non-profit organization that reviews and accredits graduate medical education (residency and fellowship) programs, and the institutions that sponsor them, in the United States (Accreditation Council for Graduate Medical Education, 2015).

American Association of Orthopaedic Surgeons (AAOS): Founded by the Academy Board of Directors in 1997, the Association engages in health policy and advocacy

activities on behalf of musculoskeletal patients and the profession of orthopaedic surgery (American Association of Orthopaedic Surgeons, 2015).

Group on Women in Medicine and Science (GWIMS): The Group on Women in Medicine and Science (GWIMS) advances the full and successful participation and inclusion of women within academic medicine by addressing gender equity, recruitment and retention, awards and recognition, and career advancement (Group on Women in Medicine and Science, 2015).

Leadership: For this research study we will define a leader as a female orthopaedic surgeon with an academic rank.

United States Medical Licensing Examination (USMLE): is a three-step examination for medical licensure in the United States and is sponsored by the Federation of State Medical Boards (FSMB) and the National Board of Medical Examiners® (NBME®). The USMLE assesses a physician's ability to apply knowledge, concepts, and principles, and to demonstrate fundamental patient-centered skills, that are important in health and disease and that constitute the basis of safe and effective patient care (United States Medical Licensing Examination, 2015).

Orthopaedic In-Training Examination (OITE): The AAOS Orthopaedic In-Training Examination (OITE) for orthopaedic surgery residents has been around since 1963. During that time, AAOS volunteers have developed thousands of questions for the exam, and hundreds of thousands of residents have taken the test (American Academic of Orthopaedic Surgeons, 2015).

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Summary

The goal of this study is to use a quantitative self-report survey of women leaders in orthopaedic medicine to provide insight on challenges women experience. This report may provide information that will assist an institution in developing a foundation for the advancement of women in orthopaedic medicine. This chapter has demonstrated that the data provided by the American Association of Medical Colleges and the Group on Women in Medicine in Science reveals a lack of women leaders in the field of orthopaedic academic medicine and a more in-depth study is needed. As revealed by Tosi and Makin's study there are several areas that need to be improved to ensure the success of women in orthopaedic surgery. A follow up study by Bickel et al. (2002) confirmed that initiatives to improve women leaders in academic medicine are not effective. Further research is needed to review the perspectives of women in orthopaedic medicine on challenges that women continue to face. It has been observed that these challenges include (1) lack of mentoring, (2) gender bias, (3) social and professional isolation, (4) promotion and equal salary (5) accommodations for family, (6) and poor recruitment efforts. Additionally, this study will investigate perspectives of women in orthopaedic medicine on leadership development. The findings of this study hopes to improve the number of women leaders not only in orthopaedic medicine, but in all subspecialties of academic medicine.

CHAPTER TWO:

LITERATURE REVIEW

Introduction

The purpose of this study is to address the lack of women leaders in orthopaedic medicine. While women leaders in other academic programs such as pediatrics and neurology have increased, women leaders in orthopaedic medicine have remained relatively the same since 2001 (AAMC, 2012). This research will describe the current status of women in orthopaedic medicine and better identify appropriate interventions to retain and promote them in this field.

An extensive literature review is necessary in order to provide a comprehensive representation of the challenges women face when pursuing leadership positions in orthopaedic medicine. The AAMC and GWIMS provide data on specialty-specific diversity benchmarks. The data can be broken down into specific resident, faculty, and leadership numbers for all academic departments in the United States. However, these data lack sufficient information on the interventions implemented over the past decade. A more in-depth look into the literature is needed in order to gain a better understanding of the barriers women are confronted with in orthopaedic medicine. This literature review will synthesize three areas of research: leadership, gender and medicine, and women in orthopaedics.

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Leadership

Leadership can be described in a multitude of ways and consists of many of components; traits, behaviors, processes, individual, groups, and theories (Northouse, 2012). In this study, I will use Northouse's definition to simplify our understanding of women in leadership roles in the field of orthopaedic medicine. Northouse (p. 5) defines "leadership as a process whereby an individual influences a group of individuals to achieve a common goal". Additionally, for this study we will define a leader as someone with an academic rank. This definition will be used in the assigned leadership role or formal position within academic medicine as Department Chairs and Program Directors are considered leaders with the responsibility and power to direct and attend to the needs of the department staff and program (Northouse, 2012). The department is the vehicle for change and the department head is the driver (Bickel, et al., 2002).

Traditionally, leadership has been viewed as a masculine role (Glazer-Raymo, 2008). Prejudice and stereotypes towards women leaders have resulted from patriarchal principles underpinning gender roles. Nevertheless, the rise of the feminist movement over the past few decades has greatly weakened such beliefs (Boushey, 2009). Substantial research has been conducted on the differences between female and male leaders (Glazer-Raymo, 2008). New trends in leadership as well as new epistemological viewpoints offer innovative possibilities for both men and women leaders.

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Trends in Leadership

As we find ourselves in the new millennium we have discovered that leadership has become more complex and challenging (Petrie, 2011). Technological innovations, such as the internet, have created a collective leadership network. According to Petrie (2011) the changing environment will cultivate new leadership competencies such as adaptability, collaborative efforts, and networking skills. Throughout that network leadership is distributed horizontally and vertically. This creates a sense of interdependence among all members, and the new leader is aware that their success is dependent upon the success of others (Kouzes and Posner, 2012). It is important for leaders to understand that creating a shared vision is an imperative process of changing an institution (Bolman and Deal, 2008). Transformational leadership is a new trend that comprises several characteristics in which this research study is trying to accomplish. Transformational leadership recognizes the need for revitalization, creating a new vision, and institutionalizing change (Pennings, 2007).

Transformational leaders support participation of their followers by involving them in the strategic planning process (Pennings, 2007). With this new trend in leadership towards work teams and collaborative decision making, institutions may actually benefit by promoting women into leadership positions, as women naturally exhibit these characteristics (Bass & Avolio, 1994). This trend may positively affect women in orthopaedic surgery, if leaders can institute the practice of developing women in academic medicine, specifically at the professor or chairman level.

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Higher Education Leadership

When researching higher education leadership, Birnbaum (1989) categorizes academic leadership into four models; collegial, bureaucratic, political, and anarchical. In the collegial organization decision making rests within a group and no one person has the authority over the other. The bureaucratic organization imposes order and hierarchical in nature. In the political organization the leader decides how resources are distributed and used. In the anarchical organization individuals have the greatest autonomy, decisions can be made quicker, but lack of structure may cause redundancy. Bennis (p. 30) said it best, "No matter how collaborative our organizations become someone still needs to choreograph the players and make the final decisions". It takes a skilled leader to simultaneously integrate the four models within an institution. To make things more complex, the world has gone through an economic and technologic transformation, positioning leaders into more significant roles within our society (Bennis, 2008).

Today higher education leaders are more challenged than ever. Not only is there a push to increase the number of women leaders, the role of the leader has expanded. Educational leaders must be able to regulate policies, motivate change, eloquently deliver speeches to a diverse student body, maintain relationships with stakeholders, cultivate relationships, be creative and innovative, and be fluent with new technology (Birnbaum, 1989). As Smith and Hughey (2006) stated, "Leadership is a key ingredient in the ultimate success or failure of any organization". The academic institution is not

the only venue in need of great leaders. Today we need all the leaders we can cultivate.

With global advancement of the 21st century, the evolution of a new leader is on the

horizon, the physician leader.

Leadership in Medicine

Physicians tend to find themselves in leadership roles through circumstance

(Collins-Nakai, 2006). Leadership competencies are not part of their academic

curriculum, yet many physicians become the CEO of their own private practice

overseeing numerous other surgeons, healthcare professionals, and students (Collins-

Nakai, 2006). Additionally, society is changing. With the impact of globalization and

the approval of the Patient Protection and Affordable Patient Care Act of 2010, societal

and cultural needs of patients are changing (Bickel, et al., 2002). Physicians find their

personal values directing them into leadership positions for the welfare of their

patients, education of students, and social responsibility (Collins-Nakai, 2006).

In a recent article by Satiani (2016), *Preparing Physicians for Leadership Positions in*

Academic Medicine, he stated the demand for physician leaders will continue to increase.

In the past administrative and clerical skills were looked down upon by physicians, but

with the economic shift and approval of the Patient Protection and Affordable Patient

Care Act (2010), we need to develop leaders who can provide cost-effective and optimal

patient care (Satiani, 2016). There are six MD/MBA dual-degree programs in the

United States, but Satiani (2016) recommends a less intensive curriculum that does not

require a substantial time commitment. There are a few alternatives that Satiani (2016)

suggests. The first would be to start preparing young physicians in medical school by

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incorporating leadership classes and health policy into the curriculum. The second would be to promote a certificate program, Certified Physician Executive (CPE), which provides education in business acumen, interpersonal skills, healthcare leadership, and leadership/management. The third option would be to seek leadership programs associated with medical societies and organizations (Satiani, 2016). Unfortunately, like higher education, women leaders in academic medicine are similarly underrepresented.

A review of historical literature reveals that gender traits such as masculinity and dominance were rewarded. These traits naturally distinguish men as leaders in our society (Northouse, 2012). Although these traits might have been rewarded in the past, the reality is that academic medicine needs all the leaders it can foster and this includes the development of women leaders (Bickel et al., 2002). Modern society claims to value ethnic and gender tolerance, yet little improvement has been made in orthopaedic medicine (Mankin, 1999). Today, diversity is a critical feature for employees and especially for leaders in academic medicine (Mankin, 1999). While there has been improvement in the number of women in academic medicine, many women have lost faith in gender equality (Compton, 2015). Thus the advancement of women in academic medicine remains disproportionate and inadequate at the leadership level (Bickel et al., 2002). To make a difference, change must happen within the culture and society of academic institutions (Compton, 2015). Leaders must create a new vision that incorporates gender-balanced programs, departments, and institutions.

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Gender and Medical Socialization

This section provides a descriptive account of women in medicine and how the past has shaped the present. As this research is specifically targeted to women, it is important to discuss the theoretical context of feminism as it relates to this study. Feminism is the advocacy of women's rights in regards to equal political, social, and economic rights (Boushey, 2009). Though a lot of progress has been made in regards to equal rights for women, more advocacy needs to go towards challenging not only governments, but the institutions themselves to create policies that promote feminism (Boushey, 2009). Over the past two centuries, the feminist movement can be divided into three movements (Eleanor, 1996). The first movement in the early 20th century challenged the legal inequalities relating to women suffrage (Eleanor, 1996). The second movement in the mid-20th century focused on the roles played by women in the society as well as their legal and social rights for women (Eleanor, 1996). This was a time was seen as the liberation of women and also when we saw an influx of women into the medical field. The third phase beginning in 1990 focuses on the shortcomings of women's equality, which is continued through this research (Eleanor, 1996).

Women have always been viewed as nurturers and care givers, thus they have always been essential to medical care (Scheckel, 2008). However, women were not allowed into U.S. medical schools until the late 1900's. For those women who were interested in pursuing a medical profession a nursing degree was a respectable healthcare profession that they could pursue (Scheckel, 2009).

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Unexpectedly, the World Wars I and II revolutionized healthcare and education during the early 20th century (Boulis and Jacobs, 2008). There was a demand for doctors during this era and women were encouraged to pursue a medical doctoral degree. It was during the 1970's that we saw an influx of women into the medical field (Lo Chen, 2002). Becoming a medical doctor was once thought of as a career for men, but it is now a top career recommendation for women, surpassing nursing and teaching (Boulis and Jacobs, 2008). Understanding the development of women in medicine promotes an awareness of diversity and encourages a shared understanding of career choices that exist within the medical field (Bickel et al., 2002).

Today, there is approximately the same number of women and men graduating from medical school, about 47% (Bickel et al., 2002). Yet only a small percentage of these women, less than 15%, enter into orthopaedic academic medicine (AAMC, 2015). With the influx of women into the medical profession in the 1970's and 1980's, the majority of women specialized in pediatrics and family practice (Martin, Arnold, & Parker, 1988). Presently, gender distribution is more even across the specialties, but there is still work to be done. Orthopaedic surgery remains the least diversified surgical sub-specialty in the United States, dominated by Caucasian males (Daniels & Murphy, 2012). Social and cultural aspects of Eastern medicine link medicine with power and domination, which are characteristics typically associated with men and remain a perceived barrier for women who are interested in orthopaedic surgery (Pringle, 1998).

Effects of the healthcare reform, Affordable Care Act of 2014, encourage physicians to rethink their relationships with each other, patients, and other healthcare professionals (Bickel et al., 2002). Concurrently, there is dramatic shift in sub-specialty selection by medical students, with women showing an increasing interest in more demanding specialties like urology, orthopaedics, and otolaryngology (Lambert & Holmboe, 2005). Simultaneously, men are showing more interest in controllable lifestyle specialties such as radiology, anesthesiology, and dermatology (Dorsey, Jarjoura, & Rutecki, 2005).

Despite the parity of women and men graduating from medical school, there remains a disproportionate number of women leaders in academic medicine; specifically in orthopaedic surgery (AAMC, 2015). Although, it was found in the 1980's that a physician's gender may have an important influence on medical practice, data collected from AAMC's GWIMS division shows an increase in the number of women entering into surgery (AAMC, 2015 and Martin, Arnold, & Parker, 1988). AAMC's 2015 data provides the foundation for the status of women in academic medicine revealing that women are underrepresented in positions of power such as senior academic positions (AAMC, 2015 and Martin, Arnold, & Parker, 1988). The question remains if our society is ready to inspire women to strive for these positions and what can we do to encourage this initiative (Martin, Arnold, & Parker, 1988).

Women in Orthopaedics

Diversity in the field of orthopaedic surgery has relatively remained unchanged since the 1970's. Thomas (1999) states that orthopaedic surgery is a specialty field

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which has been historically dominated by Caucasian men and remains the least diversified. Although the applicant pool for both African Americans and women interested in orthopaedics is relatively small compared to other specialty fields, women have been discouraged from entering the field of orthopaedics based on outdated perceptions (Thomas, 1999). Historical perceptions as to why males dominate this field suggest that females are not physically strong enough to perform certain surgical procedures, which includes the use of drills, saws, screws, and hammers (Thomas, 1999). Other perceptions indicate that men are nervous around women in the operating room and are more comfortable around colleagues who are more like themselves (Mankin, 1999). Thomas (1999) adds that women are discouraged from the field of orthopaedics because it has a reputation as being a man's specialty.

Additional factors that might discourage women from pursuing orthopaedics include less pay, less academic positions, and women receive less mentoring than their male colleagues (Mankin, 1999). Baldwin, Namdari, Bowers, Keenan, Levin, and Ahn (2011) suggest that lack of female interest maybe a factor affecting women's decision to go into orthopaedics. A study by Schroeder, Zisk-Rony, Liebergall, Tandeter, Kaplan, Weiss, and Weissman (2013) compared perceptions of men and women on family life, work hours, and gratification. The study indicated that women have a negative perception of orthopaedic surgery as a whole and they are just not interested in this field. Additionally, they found that significantly more men than women rate orthopaedic surgery to be interesting and challenging. They found few differences in

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the perceptions of men and women as it relates to family life, work hours, and gratification.

Experts agree that it is vital for orthopaedic residency programs to make more of an effort in diversifying their programs (Mankin, 1999, Thomas, 1999, Biermann, 1998, Gebhart, 2007, and Templeton, Wood, & Haynes, 2007). Mankin (pg. 86) points out that, "Everyone regardless of origin, creed, and gender has something to contribute; often their contribution is more important as a result of their ethnic or gender diversity."

In the mid-1990's a panel of selected female orthopaedic surgeons and senior AAOS society members used the Delphi technique to identify challenges female orthopaedic surgeons face in their careers (Tosi & Mankin, 1998). Tosi and Mankin's (1998) research study revealed six areas for improvement: (1) increase mentoring, (2) overcome gender bias, (3) reduce women's social and professional isolation, (4) support promotion and equal salary (5) providing accommodations for family, (6) and expanding recruitment efforts. Although the study reported these as recommendations for chairmen of orthopaedic residency programs to implement, the application has been slow and advancement for women has been insufficient.

A follow up report completed by AAMC (2002) found similar results. Bickel et al., (2002) discuss AAMC's Women's Leadership Project underwent initiatives to increase women in leadership, such as, improving faculty diversity, targeting professional development needs, assessing institutional practices, enhancing search committees for women, and supporting the AAMC's Women in Medicine Program. Yet,

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little improvement has been made in the increase in the number of women leaders. From the literature, it is evident that additional research needs to be done to improve the number of women leaders in orthopaedic medicine. The research suggests that institutions should be evaluated on their leadership development and what they have done to overcome challenges for women leaders in orthopaedic medicine.

The following is a brief review of complex social challenges in relation to women in academic medicine based on Tosi and Mankin's (1998) six areas of improvement.

Mentoring for Women

Mentoring is a career development resource for both men and women. A mentor can be a key element to success (Sanfey, Hollands, and Gantt, 2013). However, women claim to receive inadequate mentoring and perceive it to be an obstacle to academic achievement (Scheckel, 2008). It has been recommended that chairpersons develop mentoring programs within the department, provide travel funds so young academicians can broaden their network, and or help encourage women to join orthopaedic support groups like Ruth Jackson Orthopaedic Society (Sanfey, Hollands, and Gantt, 2013). Additionally, it is suggested that by increasing the number of female faculty in a program might increase the interest of female medical students applying to orthopedic residents (Jagsi et al., 2014). Teuscher and Cannada (2016) state when young women see female orthopaedic surgeons in practice, they can envision themselves in this role. Mentorship does not have to be gender specific, female-to-female, nor does it have to be one-on-one, but it should be proactive and supportive (Teuscher and Cannada, 2016).

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Gender Bias

Barriers remain for women entering into orthopaedic surgery and academic medicine. It has been reported that some women are unequally treated in the medical profession; from being denied training on surgical procedures to being denied leadership roles within an academic department (Tosi & Mankin, 1999). Recommendations include gender sensitivity training, case log review, and creating an anonymous tip line for concerns. Gebhart (2007) states it is imperative that we improve diversity in orthopaedic residency programs. He states, that by only recruiting Caucasian men, orthopaedic programs will lose more than half of the candidates at the top of the applicant pool. Experts agree that it is vital that orthopaedic residency programs make more of an effort in diversifying their programs. By investing in diversity, the corporate world has shown evidence of growth, creativity, increased performance, increased ideas, production, retainment, and an increased customer base (Bickel et al., 2002). In academic medicine change needs to be made at the department level. The department chair is the key to integrating women and minorities and breaking down barriers (Bickel et al., 2002).

Social and Professional Isolation

Social and professional isolation arises when a member is excluded from activities in which other group members participate in. Social and professional isolation may contribute to occupational stress, poor relationships with colleagues, and lack of morale (Dussault, Deaudelin, Royer, & Loiselle, 1999). Social activities allow professionals to make information connections with colleagues and this can be essential

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to academic achievement. It is well known that the field of orthopaedic surgery is uniformly Caucasian males. Bickel et al. (p. 1051) attributes this hiring trend to the theory of "homosocial reproduction – that is, people tend to hire people like themselves." Boateng and Thomas (2011) emphasize that a lack of inclusion or shared experiences may leave excluded members vulnerable to misrepresentation and or unconscious discrimination. Multiple societies stress the need for diversity to prepare institutions to care for patients of all backgrounds (Jimenez, 1999). The development of specialty organizations or programs may assist with the lessening of social and professional isolation by having minority representation (Jimenez, 1999).

Promotion and Equal Salary for Women

The gender pay gap exists in practically every profession throughout the United States. Ash, Carr, Goldstein, & Friedman (2004) found that the greater the seniority the larger the salary deficits for men and women. Tosi and Mankin (1998), Bickel et al., (2002) confirmed that female orthopaedic surgeons with the same job, qualifications, and completed the same number of surgical procedures still receive less pay than their male colleagues. In a recent study by Jagsi, Griffith, Stewart, Sambuco, DeCastro and Ubel (2013) found that differences in salary compensation exist between women and men physician researchers. The difference reported was significant ($P < .001$) with men receiving +$10,921 in salary more than women. Inequality can be very disheartening for women who put their personal lives on hold to start a career and care for others (Ash, Carr, Goldstein, & Friedman, 2004). Establishing equitable salary tables and

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closing the salary gap is important for the retainment of women physicians (Tesch, Wood, Helwig, & Nattinger, 1995).

Accommodations

The movement of women into the labor force had a dramatic influence on social change (Martin, Arnold, & Paker, 1988). Dual-career couples' household responsibilities have increased in addition to their work responsibilities (Allen, 2000). Boulis and Jacobs (p. 8) state, becoming a medical physician is demanding in terms of education, work hours, and professional commitment. Female physicians face the dilemmas of balancing and integrating work and family life more so than their male colleagues such as pumping milk between surgical procedures. Consequently, inequities still exist among female and male physicians in terms of marriage, salary, publications, mentoring, and career advancement. Yet, there are many opportunities that institutions can provide to enhance family work-life balance for both men and women. Schroen, Brownstein, and Sheldon (2004) found that both men and women expressed a desire for more personal and family time. Allen (2000) states that the family-friendly benefits can help employees manage work and non-work responsibilities. Today, leave policies affect both men's and women's family and life-style decisions (Teuscher & Cannada, 2016). Family-supportive organizations and policies may assist with the reduction of turn-over, burn-out, and job satisfaction (Allen, 2000).

Recruitment and Retainment

Despite the increase in the number of women graduating from medical school, there remains a disparity in the number of women in orthopaedic academic medicine. Bickel, Wara, Atkinson, Cohen, Dunn, Hostler, Johnson, Morahan, Rubenstein, Sheldon, and Stokes (2002) suggested that the lack of women in orthopaedic leadership positions is directly associated with the lack of women who go into orthopaedic residency programs. Gebhardt (1999) stated it requires commitment from the chairman and program director to recruit and advocate for gender-balanced programs and to increase diversity. It is recommended to research what other surgical programs have done to successfully increase the recruitment of women.

Additionally, there are many benefits for retaining those valued employees in which an institution has spent recruiting. Employees are the frame work to the institution (Bolman & Deal, 2008). Maintaining teams in the healthcare field is critical to team functioning, productivity, morale, patient care, and reduces turnover costs to the institution (Bolman & Deal, 2008).

The Group on Women in Medicine and Science (GWIMS)

The AAMC is the federal resource used to benchmark women in academic institutions. The first report of *Women in U.S. Academic Medicine Statistics and Medical Schools Benmarking Report* was published in 1983 and since that time it has been published annually. The report provides an overview of the distribution of women students, residents, faculty, and administrative leaders in academic medicine (AAMC, 2009). In 2009, the AAMC established a formal group, The Group on Women in

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Medicine and Science (GWIMS) to improve the advancement of women leaders in academic medicine. GWIMS addresses women issues such as gender equity, career advancement, recognition, and retention through institutional interventions. However, much more research needs to be done in order to pinpoint gaps in these areas.

For the purpose of this study, GWIMS Benchmarking Tool will be used to compare the number of women faculty numbers with national averages and then to create action steps to improve these areas

The Ruth Jackson Orthopaedic Society (RJOS)

Ruth Jackson, M.D., the first female orthopaedic surgeon, founded The Ruth Jackson Orthopaedic Society in 1983. RJOS is the oldest surgical women's organization in the United States (RJOS, Retrieved February 12, 2016). It was originally designed to support women in orthopaedic medicine, but now it supports members of both genders. The mission of RJOS (2015) is to support the development of women leaders in the orthopaedic profession through education, mentoring, and research. With a membership of over 500 female orthopaedic surgeons, RJOS is a support and networking group, which allows women to voice their concerns and brainstorm on ideas to better the field for future women in orthopaedics. For the purpose of the study RJOS members will be invited to participate in a self-report survey.

Summary

From the literature, it is evident that many factors should be considered when reviewing strategies to improve women leaders in orthopaedic surgery. The United States has made tremendous advances within the medical field and women have made

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a major impact within the profession (Pringle, 1988). Yet, with the increasing number of women going into the medical field, women have made relatively few gains in leadership roles in orthopaedics medicine. Studies have indicated there is a need for policy makers to implement strategies to improve the advancement of women leaders. The literature suggests that institutions who are able to recruit, retain, and promote women will likely have long-term economic, social, and academic success. In conducting this study, it became clear that the following questions must be addressed:

A. Practices for women in orthopaedics should be implemented at the institutional level.

Research Question 1: In what ways do female orthopaedic surgeons feel institutions support the development of women leaders?

B. Practices for women in orthopaedics shoulder consider challenges expressed throughout the profession.

Research Question 2: In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional isolation, promotion and equal salary, accommodations, recruitment and retainment?

C. Practices for women in orthopaedics medicine should offer guidance and support for leadership development.

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Research Question 3: In what ways do female orthopaedic surgeons feel institutions are effective at maintaining supportive environments, so that women can develop into leaders?

D. Practices for women in orthopaedic medicine should offer a work-life balance that satisfies both women's ambition and lifestyle.

Research Question 4: Are female orthopaedic surgeons satisfied in academic medicine?

Chapter two explored the relevant literature related to this study, which included leadership, gender and medical socialization, and women in orthopaedics. The study will now move to chapter three which will present the methods and procedures for this study.

CHAPTHER THREE:

METHODS

Introduction

The purpose of this chapter is to describe the methods used to explore the perceptions of women in orthopaedic surgery in regards to leadership development programs within their institution. This chapter will begin with the research questions, then describe the pilot study, which was used to inform this research, and finishes with the research process. This study was conducted using a quantitative methods approach. The survey questions were designed to describe and understand the perceptions of women in orthopaedic medicine (Lichtman, 2013). An analysis of the survey data provides insight into the perceptions of women in orthopaedic surgery on leadership development. Johnson and Christensen (2012) emphasized that quantitative research is more reliable, objective, and looks at relationships between variables.

In this study, the data source included a self-report survey emailed to all known women in orthopaedic medicine. The research questions were designed to pinpoint gaps in the advancement of women in orthopaedic medicine. The survey responses were transformed into numeric values and descriptive statistics were used.

A newly modified survey combined the areas of improvement from the literature and both Tosi and Makin's (1999) and the University of North Carolina's (2012) questionnaires. The study's research questions are as follows:

A. Practices for women in orthopaedics should be implemented at the institutional level.

Research Question 1: In what ways do female orthopaedic surgeons feel institutions support the development of women leaders?

B. Practices for women in orthopaedics shoulder consider challenges expressed throughout the profession.

Research Question 2: In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional isolation, promotion and equal salary, accommodations, recruitment and retainment?

C. Practices for women in orthopaedics medicine should offer guidance and support for leadership development.

Research Question 3: In what ways do female orthopaedic surgeons feel institutions are effective at maintaining supportive environments, so that women can develop into leaders?

D. Practices for women in orthopaedic medicine should offer a work-life balance that satisfies both women's ambition and lifestyle.

Research Question 4: Are female orthopaedic surgeons satisfied in academic medicine?

Pilot Study

Prior to this study, a pilot study was conducted, which surveyed key women in orthopaedic medicine. The questions for the survey were modified from Tosi and Mankin's (1998) *Ensuring the Success of Women in Academic Orthopaedics* and combined with revised questions from the University of North Carolina's Kenan-Flagler Business School (2012) *UNC's Leadership Survey 2012: Women in Business*. The two surveys were integrated and reformatted into a new survey that features leadership development for women in orthopaedic surgery.

The purpose of the pilot study was to gather preliminary information about perspectives of women in orthopaedic medicine in regards to leadership development. This preliminary information was used to inform this study and future studies related to this topic. The pilot study was conducted electronically. A total of eight female orthopaedic surgeons were sent the survey. The survey was emailed to an orthopaedic program director, who forwarded the survey to the eight participants. Participants were selected to represent female orthopaedic surgeons in academic medicine in terms of academic appointment, professional experience, and qualifications. A total of four female orthopaedic surgeons completed and returned the survey.

The purpose of the pilot study was to critique the survey instrument for comprehension, layout, and wording as well as to test the data collection. The pilot study was used to examine the feasibility of the approach, improve the quality and effectiveness of the larger study as well as to make sure that the data collected is reliable. Reliability of the survey is contingent on the consistency of the answer to the

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same questions. During the pilot phase the responses were checked for consistency within each section to ensure reliability. Five categories were determined and multiple questions were listed in each category. Responses were evaluated to see if questions were reliable. The first category captures demographic data. The four other categories aligned the research questions; development, challenges, maintenance of women leaders, and satisfaction. One participant suggested the following changes; instead of having a poor to excellent Likert scale, she suggested 0-10 scale, to ask women how long they have been at their institution, and to ask more questions about if women have personally been given leadership opportunities. A second participant suggested the following changes; change the age categories and add a "prefer not to answer" option, ask about fellowship training, and to change company to institution. The survey was modified and includes all of these changes. The results of the pilot study identified three additional questions to address personal feelings of survey participants in regards to bias, length of professional experience, and personal leadership opportunities. These questions were included in the modified survey. Last, pilot study participants recommended that the survey response sections be similar. The response sections are now cohesive. The Likert scale ranged from not important (1) to very important (4) in most areas. In sections three, four, and five, the respondents are asked to rate different areas of improvement. Frequency and median were used to determine central tendency.

Two reliability tests were conducted to evaluate the validity and reliability of the survey. The first test was the Cronbach's alpha. Cronbach's alpha was used to measure

the internal consistency of the questions in each category; demographics, development, challenges, maintenance, and satisfaction. The following are the results of the reliability test broken down by category:

Table 2. Pilot Study: Cronbach's Alpha

Category	Cronbach's Alpha
Demographics	.593
Development:	.313
Challenges:	.822
Maintenance:	.792
Satisfaction:	.150

In regards to leadership development, younger participants were not aware of their institution's leadership development program initiatives as compared to those who were more tenured at their institution.

After analyzing the satisfaction surveys of each individual, most individuals were very satisfied with their benefits, but very unsatisfied with development programs for women within their institutions. This may have resulted in a low Cronbach's Alpha for this category as benefits and development programs are not usually interconnected with satisfaction.

A Cronbach's alpha was completed on the entire survey with a reliability score of .458, which is considered a moderate score. The challenges category had a Cronbach's alpha score of .822, which is considered relatively high reliability for the questions within this section. The maintenance category had a Cronbach's alpha score of .792 which is considered relatively high reliability for the questions within this section.   The satisfaction category had the lowest Cronbach's alpha of .150. Inconsistency can be

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vetted out by increasing the number of participants who will be completing the survey. The survey was designed using Survey Monkey online software and is provided in the Appendix D.

After corrections and modifications were made to the original survey, the same participants were surveyed a second time to measure the reliability of the modified survey. The Test-Retest method was used to evaluate the stability, repeatability, and reproducibility of the survey. The same survey was given to the same participants three months apart and a paired sample t-test was conducted using SPSS software. A paired sample t-test measured the population means of two groups. A paired sample t-test was conducted to compare the first survey, which was titled the pre-test and the second survey, which was titled the post-test. The following are the results of the paired sample t-test.

Table 3. Pilot Study: Paired Sample T-test

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre1	2.00	4	.816	.408
	post1	1.50	4	.577	.289
Pair 2	pre2	2.00	4	.000	.000
	post2	1.25	4	.500	.250
Pair 3	pre3	2.25	4	.957	.479
	post3	1.75	4	.500	.250
Pair 4	pre4	2.67	3	2.082	1.202
	post4	4.33	3	.577	.333
Pair 5	pre5	3.50	4	1.915	.957
	post5	2.75	4	2.062	1.031
Pair 6	pre6	2.00	3	1.000	.577
	post6	2.33	3	.577	.333
Pair 7	pre7	2.00	3	1.000	.577

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Table 3. (Continued)

		Mean	N	Std. Deviation	Std. Error Mean
		Paired Samples Statistics			
	post7	3.00	3	.000	.000
Pair 8	pre8	1.33	3	.577	.333
	post8	3.00	3	.000	.000
Pair 9	pre9	1.00	3	.000	.000
	post9	2.67	3	.577	.333
Pair 10	pre10	1.33	3	.577	.333
	post10	3.00	3	.000	.000
Pair 11	pre11	1.67	3	.577	.333
	post11	2.67	3	1.155	.667
Pair 12	pre12	4.33	3	2.887	1.667
	post12	4.00	3	2.000	1.155
Pair 13	pre13	1.67	3	1.155	.667
	post13	3.00	3	1.000	.577
Pair 14	pre14	1.00	3	.000	.000
	post14	3.33	3	.577	.333
Pair 15	pre15	1.00	3	.000	.000
	post15	2.33	3	.577	.333
Pair 16	pre16	3.67	3	2.082	1.202
	post16	3.00	3	.000	.000
Pair 17	pre17	4.67	3	2.309	1.333
	post17	3.00	3	.000	.000
Pair 18	pre18	2.33	3	.577	.333
	post18	3.33	3	.577	.333
Pair 19	pre19	2.00	3	.000	.000
	post19	2.67	3	1.155	.667
Pair 20	pre20	3.00	3	1.732	1.000
	post20	1.67	3	.577	.333
Pair 21	pre21	2.33[a]	3	.577	.333
	post21	1.33[a]	3	.577	.333
Pair 22	pre22	1.67	3	.577	.333
	post22	1.33	3	.577	.333
Pair 23	pre23	2.33	3	.577	.333
	post23	1.67	3	.577	.333
Pair 24	pre24	1.67	3	.577	.333
	post24	2.33	3	.577	.333
Pair 25	pre25	4.33[a]	3	.577	.333
	post25	2.33[a]	3	.577	.333
Pair 26	pre26	4.33	3	.577	.333

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Table 3. (Continued)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
	post26	1.67	3	.577	.333
Pair 27	pre27	4.33	3	.577	.333
	post27	2.67	3	.577	.333
Pair 28	pre28	3.33	3	.577	.333
	post28	3.67	3	1.528	.882
Pair 29	pre29	4.33[a]	3	.577	.333
	post29	4.33[a]	3	.577	.333

a. The correlation and t cannot be computed because the standard error of the difference is 0.

Table 3. (Continued)

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Pre1 — post1	.500	1.291	.645	-1.554	2.554	.775	3	.495
Pair 2	pre2 — post2	.750	.500	.250	-.046	1.546	3.000	3	.058
Pair 3	pre3 — post3	.500	1.291	.645	-1.554	2.554	.775	3	.495
Pair 4	pre4 — post4	-1.667	2.309	1.333	-7.404	4.070	-1.250	2	.338
Pair 5	pre5 — post5	.750	3.775	1.887	-5.257	6.757	.397	3	.718
Pair 6	pre6 — post6	-.333	1.528	.882	-4.128	3.461	-.378	2	.742
Pair 7	pre7 — post7	-1.000	1.000	.577	-3.484	1.484	-1.732	2	.225
Pair 8	pre8 — post8	-1.667	.577	.333	-3.101	-.232	-5.000	2	.038
Pair 9	pre9 — post9	-1.667	.577	.333	-3.101	-.232	-5.000	2	.038

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Table 3. (Continued)

		Paired Samples Test							
			Paired Differences						
					95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 10	pre10 — post10	-1.667	.577	.333	-3.101	-.232	-5.000	2	.038
Pair 11	pre11 — post11	-1.000	1.732	1.000	-5.303	3.303	-1.000	2	.423
Pair 12	pre12 — post12	.333	1.528	.882	-3.461	4.128	.378	2	.742
Pair 13	pre13 — post13	-1.333	1.528	.882	-5.128	2.461	-1.512	2	.270
Pair 14	pre14 — post14	-2.333	.577	.333	-3.768	-.899	-7.000	2	.020
Pair 15	pre15 — post15	-1.333	.577	.333	-2.768	.101	-4.000	2	.057
Pair 16	pre16 — post16	.667	2.082	1.202	-4.504	5.838	.555	2	.635
Pair 17	pre17 — post17	1.667	2.309	1.333	-4.070	7.404	1.250	2	.338
Pair 18	pre18 — post18	-1.000	1.000	.577	-3.484	1.484	-1.732	2	.225
Pair 19	pre19 — post19	-.667	1.155	.667	-3.535	2.202	-1.000	2	.423
Pair 20	pre20 — post20	1.333	1.528	.882	-2.461	5.128	1.512	2	.270
Pair 22	pre22 — post22	.333	.577	.333	-1.101	1.768	1.000	2	.423
Pair 23	pre23 — post23	.667	1.155	.667	-2.202	3.535	1.000	2	.423
Pair 24	pre24 — post24	-.667	1.155	.667	-3.535	2.202	-1.000	2	.423
Pair 26	pre26 — post26	2.667	1.155	.667	-.202	5.535	4.000	2	.057
Pair 27	pre27 — post27	1.667	.577	.333	.232	3.101	5.000	2	.038
Pair 28	pre28 — post28	-.333	1.155	.667	-3.202	2.535	-.500	2	.667

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A paired sample t-test was conducted to compare a pre-test and a post-test survey.   There was a significant difference in the scores of pair 8 pre-test (M=1.3, SD=.577) and post-test (M=3, SD=0) conditions; t(2)= -5, p = 0.038. The results suggest that in the post-test participants scored "creating a new vision that includes the development of women leaders" higher than in the pre-test.

There was a significant difference in the scores pair 9 pretest (M=1, SD=0) and post-test (M=2.67, SD=.577) conditions; t(2)=-5, p = 0.038." The results suggest that in the post-test participants scored "institutionalizing change to accomplish the vision" higher than when they took the pre-test.

There was a significant difference in the scores pair 10 pre-test (M=1.3, SD=.577) and post-test (M=3, SD=0) conditions; t(2)=-5, p = 0.038." The results suggest that in the post-test participants scored "the importance of having a leadership program" higher than when they took the pre-test.

There was a significant difference in the scores pair 14 pre-test (M=1, SD=0) and post-test (M=3.3, SD=.577) conditions; t(2)=-7, p = 0.020." The results suggest that in the post-test participants scored "retaining women so they aspire to leadership levels" higher than whey they took the pre-test.

There was a significant difference in the scores pair 27 pre-test (M=4.3, SD=.577 and post-test (M=2.67, SD=.577) conditions; t(2)=5, p = 0.038." The results suggest that in the post-test participants scored "requirement of scholarly activity" lower than when they took the pre-test. Suggesting that the requirement of scholarly

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activity is not as big of a challenges as they originally stated. Overall the answers to the pre-test and post-test remained relatively consistent suggesting that the modified survey is relatively reliable.

Research Design

The research design for this study was based on guidelines for quantitative analysis. The conceptual framework for this research study was based a modified survey from Tosi and Mankin's (1998) *Ensuring the Success of Women in Academic Orthopaedics* and combined with revised questions from the University of North Carolina's Kenan-Flagler Business School (2012) *UNC's Leadership Survey 2012: Women in Business*. Tosi and Mankin's (1998) questionnaire revealed six key areas for improvement to ensure the success of women in orthopaedic medicine. The University of North Carolina's survey analyzed perceived barriers for the advancement of women into leadership roles. Using an integrated method, a new modified and reformatted survey combined the six areas of improvement from Tosi and Makin's questionnaire and two areas from the University of North Carolina's questionnaire. The results of this study may be used to help develop leadership programs ideas for women in orthopaedic medicine.

To provide reliable results, efforts have been made to develop a systematic method to categorize the data into ordinal scales (Auer-Srnka & Koeszegi, 2007). For this study, the first and second stage of the gathering material and transforming it into written material was completed in the literature review (Auer-Srnka & Koeszegi, 2007). In stage three, the literature was divided and coded into units. An analysis of the

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literature provided an initial list of approximately three potential factors that may contribute to the discrepancy of women in academic medicine (Auer-Srnka & Koeszegi, 2007). These factors were coded into three super categories; leadership, barriers, and support (Auer-Srnka and Koeszegi, 2007). Then, in step four, the factors were categorized into three main schemes relevant to the research questions; lack of leadership and development programs, challenges unique to women, and maintaining supportive environments (Auer-Srnka & Koeszegi, 2007). In the final stage, participant's responses were assigned an ordinal value to each sub-category response. The Likert scale ranged from not important (1) to very important (4) or poor (1) to excellent (4) in most areas.

Survey Monkey and SPSS were used to provide descriptive statistics and graphs to describe the nominal data. Frequency, mode, and or median were used to determine central tendency.

Population and Sample

The data source included a self-report survey emailed to all known women in orthopaedic medicine. Email communication was sent to all known chairman listed with the American Academic of Orthopaedic Surgeons (AAMC) Faculty Roster Representatives. The study population included approximately 600 participants in three organizations: The Group on Women in Medicine and Science (GWIMS), Ruth Jackson Orthopaedic Society (RJOS), and American Academy of Orthopaedic Surgeons (AAOS). The survey was made available to as many women as possible in orthopaedic

medicine in the United States in 2015. Table 3 provides a list of members from organizations targeted to women in orthopaedic medicine.

Table 4. Organizations and Members

Organization	Total Number of members
The Group on Women in Medicine and Science (GWIMS).	572
The Ruth Jackson Orthopaedic Society (RJOS).	786
The American Academy of Orthopaedic Surgeons (AAOS).	1,273

*These data were provided by each organization

There are approximately 600 known female orthopaedic surgeons in the United States. This researcher of this study anticipated at least a 20% response rate or approximately 120 women participating in this survey. Partially completed surveys were used if a category was completely answered. However, surveys that had partially completed categories were not be used.

The Group on Women in Medicine and Science (GWIMS)

GWIMS is committed to advancing the full and successful participation of women in all roles within academic medicine. GWIMS is committed to addressing gender disparities around recruitment, retention, recognition, and advancement of women. According to GWIMS May 2012 report there are approximately 572 women in orthopaedic academic medicine.

The Ruth Jackson Orthopaedic Society (RJOS)

RJOS is committed to advancing the science and practice of orthopaedic surgery among women. As of 2015, RJOS has 786 members. RJOS provides professional

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development, leadership, and mentoring to female orthopaedic surgeons who are pursuing careers in orthopaedic surgery and academic medicine (RJOS, Retrieved February 12, 2016).

The American Academy of Orthopaedic Surgeons (AAOS)

AAOS is an orthopaedic organization that provides education and practice management services for orthopaedic surgeons. AAOS has over 40,000 members. Of those 40,000 members only about 3% of them are women, which is approximately 1,273 women (residents, fellows, emeritus). The researcher will target AAOS chairman to ensure that as many women as possible in orthopaedic surgery have been recruited for this study who are not part of GWIMS or RJOS.

Survey Approach

Survey questions were the basis of the research instrument. Surveys are beneficial for quantitative research in that they are easily dispersed to potential participants, reliable, and objective, with minimum costs (Johnson & Christensen, 2012). This survey was designed to extract maximum data with minimum questions. The survey was categorized into five different sections: development, challenges, maintenance, and satisfaction. The survey was emailed to chairman and program coordinators who forwarded it to women in orthopaedic medicine. No inferential statistics were used.

Survey Instrument Design

The survey development involved the modification of Tosi and Mankin's (1998) survey *Ensuring the Success of Women in Academic Orthopaedics* and the University of

North Carolina's Kenan-Flagler Business School (2012) *UNC's Leadership Survey 2012: Women in Business.* Although there have been multiple surveys benchmarking women in academic medicine as well as addressing barriers in orthopaedic academic medicine; a survey instrument has not been designed to address perspectives of women in orthopaedic medicine on leadership development. Questionnaires were sent to GWIMS, RJOS, and AAOS who have previously canvased their internal communities regarding women in orthopaedic medicine. The data were analyzed to determine female orthopaedic surgeon's perceptions about barriers that may exist for women in orthopaedic medicine.

The survey was categorized into the following five parts: (1) demographics, (2) development of women leaders, (3) challenges for women leaders, (4) maintenance of women leaders, and (5) satisfaction. The first category, questions 1-5, consisted of questions pertaining to demographics such as age, education, and title.

The second category consisted of questions pertaining to the development of women leaders. Survey questions 6, 8, and 9 asked to participants to assess the institutional culture in regards to the development of leadership programs. These questions related to research question one (1). In which ways do female orthopaedic surgeons feel institutions support the development of women leaders?

The third category of the survey consisted of questions pertaining to challenges women leaders experience when seeking promotion. The survey questions asked to participants to delineate challenges for women leaders. Key themes from the literature review included challenges such as recruitment, retainment, development, leadership

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skills, equal pay, gender bias, social and professional isolation, accommodations, and

mentoring. Survey questions 10, 11, 12, 13, 14, 15, and 16 related to research question

two (2). In what ways did female orthopaedic surgeons feel institutions have overcome

challenges such as mentoring for women, gender bias, social and professional isolation,

promotion and equal salary, accommodations, recruitment and retainment?

The fourth category of the survey consisted of questions pertaining to the

maintenance of women leaders. The purpose of this section will analyze how effective

institutions are at maintaining supportive environments so that women can develop

into leaders in academic orthopaedic medicine. Key themes from the literature review

included retainment, communication, adaptability, culture, developing others,

diversity, and talent pool. Survey questions 17, 18, and 19 related to research question

three (3). In what ways did female orthopaedic surgeons feel institutions are effective at

maintaining supportive environments so that women can develop into leaders?

The fifth category of the survey, question 20, asks women to report whether or

not they are satisfied with other areas of their institution. These other areas included

continuing education, training, work-life balance, and advancement. This section

captured other outlying areas that may indirectly affect women leaders in orthopaedic

medicine that are not related to leadership programs. A Likert scale was used to

provide ordinal data. In category two, the questions about the importance of leadership

programs. The Likert scale ranged from not important (1) to very important (4) in most

areas. In categories three, four, and five, the respondents were asked to rate different

areas of improvement. The Likert scale ranged from poor (1) to excellent (4) in most areas. Frequency, mode, and or median were used to determine central tendency.

Data Analysis

The survey has been designed to provide data outcomes in regards to development, challenges, maintenance, and satisfaction of leadership programs for women in orthopaedic medicine. Each participant completed an electronic survey through Survey Monkey. The data were analyzed using descriptive statistics, mean, mode, and frequency, where appropriate for each research question. No inferential statistics were be used. If partial surveys were returned, only completed categories were used to maintain section validity and reliability.

Data Collection

IRB approval for this study was obtained following the successful defense of the proposal. Collection for this study occurred in two ways: (1) solicitation of study participants through referrals, also known as snowball sampling and (2) solicitation of participants through email through program directors and program coordinators. The survey was generated electronically using Survey Monkey, and was accessed through an electronic link that was provided in the email. The email contained a brief study description, IRB number, and the study link (Survey Monkey). Participants were encouraged to forward the survey link to other female orthopaedic surgeons.

Data collection occurred over the course of six (6) weeks beginning approximately July 1, 2016 ending August 15, 2016. A total of 699 participants were solicited through email. Of those, over 100 emails were returned and unusable.

Identifying information was not linked to the participant survey responses. The only response rate that was verifiable for this study was the rate of return versus total number of mailed responses. There was a 19.8% response rate from participants based on the number of returned participant responses which met the number needed to achieve a power of .80. The rate of response was acceptable. The deadline for responses was approximately 45 days from the initial request. Most of the responses occurred in the second week of data collection.

Summary

Chapter 3 addressed the population, sample, research design, data collection procedures, how the data will be analyzed, and then discussed. The research questions stemmed from Tosi and Mankin's (1998) article, *Ensuring the Success of Women in Academic Orthopaedics* and University of North Carolina's Kenan-Flagler Business School (2012) *UNC's Leadership Survey 2012: Women in Business*. A pilot study was conducted to test the reliability and of the research instrument and additional questions were removed, added or modified.

The survey was successfully emailed to approximately 590 AAOS chairman and program coordinators with a 19.8% return rate. The survey was emailed to RJOS with no response if they forwarded it to their members. The survey was emailed to GWIMS with new response if they forwarded it to their members. Chapter 4 will address the study findings and statistical results. Chapter 5 will present a summary of the findings, conclusions, and recommendations.

CHAPTER FOUR:

RESULTS

Introduction

The purpose of this study was to explore perceptions of women in orthopaedic surgery in regards to leadership development programs within their institution. This chapter begins with a detailed quantitative statistical analysis of the data, the results of which are presented in order of each research question. There were four main research questions in this study. The collected data were analyzed using descriptive statistics; frequency, mean, median, and percentages. This section contains a description of the research questions and the analysis for each question. All the data were collected from responses of participants who participated in the Perspectives of Women in Orthopaedic Surgery on Leadership Development survey.

Six hundred and ninety-nine emails were initially sent to chairmen and program coordinators identified by the American Academy of Orthopaedic Surgeons and the Association of Residency Coordinators in Orthopaedic Surgery. Over one hundred of those emails were returned back. One hundred and seventeen usable surveys were returned with one blank survey returned and unusable. With 117 returned and usable surveys out of 590, the response rate was 19.8%.

Demographics

In this section participants were asked their age, residency and fellowship training, academic rank, and length of time at their institution. One hundred and seventeen participants responded to the five demographic questions. One participant did not respond to the age category, because she was outside the age limits, but she completed the remainder of the survey and noted this in the comments section. Ninety-one participants (78.45%) were between the ages of 25-44. Twenty-five participants (21.55%) were over the age of 45. Seventy-seven (65.81%) participants completed an orthopaedic residency program, 40 (34.19%) had not yet completed a residency program. One-hundred and fifteen (98.29%) participants completed a fellowship, two (1.71%) had not yet completed a fellowship program. Seventy (59.83) participants listed their fellowship sub-specialty. Fellowship sub-specialties included sports medicine, trauma, hand, adult reconstruction, pediatrics, foot and ankle, spine, tumor, and shoulder. When participants were asked about their titles at their institutions, 7 (5.98%) stated they were instructor. Thirty (25.67%) participants listed they were Assistant Professors. Sixteen (13.68%) listed they were Associate Professors. Ten (8.5%) listed they were Professors and 54 (46.15%) listed Other. Participants were given an opportunity to provide additional information for the Other option. Their responses included, Associate Dean, Clinical Associate Professor, Senior Partner, staff surgeon, private practice, attending, resident or fellow. When participants were asked how long they were at their institutions, 58 (49.57%) replied 1-3 years, 35 (29.91%) replied 4-7

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years, 8 (6.84%) replied 8-11 years, 5 (4.27%) replied 12-15 years, and 11(9.4%) replied 16 or more years.

Research Questions Related to Leadership Development

A. Practices for women in orthopaedics should be implemented at the institutional level. This section was addressed with the following research question.

Research Question 1*:* In what ways do female orthopaedic surgeons feel institutions support the development of women leaders? To address this research question participants were asked four questions related to institutional culture and leadership development. Participants were asked to rate each question on a scale from 1 (not important), 2 (somewhat important), 3 (very important), 4 (don't know), and a Not Applicable (NA) option.

When participants were asked to evaluate leadership importance at their institution, 47 (41.9%) participants felt it was very important to their institution to develop a leadership program at their institution. Forty-seven (41.9%) participants felt it was very important to their institution to increase women leaders. Thirty-six (32.14%) participants felt it was very important to their institution to create a new vision to include the development of women leaders. Thirty-four (30.36) participants felt it was very important to their institution to institutionalize change to accomplish this vision. Table 5 contains the mean responses, frequencies, and percentages related to each question. The data in the table indicates that although participants felt that their institutions recognize the need for developing leadership programs and increasing

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women leaders, the numbers decrease in relation to initiatives to creating a new vision, and institutionalizing change.

Table 5. Leadership Development (Section 2: Question 6)

	Not Aware	Not important (1)	Somewhat important (2)	Very important (3)	Not Applicable	Total	Mean
How important do you think these characteristics are to your institution?							
Recognizing the need for developing leadership programs	3.57% 4	5.36% 6	49.11% 55	41.96% 47	.088% 1	112	2.38
Recognizing the need for increasing women leaders	4.46% 5	12.50% 14	40.18% 45	42.86% 48	.088% 1	112	2.32
Creating a new vision that includes the development of women leaders	5.36% 6	17.86% 20	43.75% 49	33.04% 37	.088% 1	112	2.16
Institutionalizing change to accomplish the vision	6.25% 7	18.75% 21	44.64% 50	30.36% 34	.088% 1	112	2.12

* Note 1. N=117and missing data =4
*Note 2. The mean was calculated on the responses Not Important (1), Somewhat Important (2), and Very Important (3) only.

When participants were asked to evaluate the importance of a leadership development program, 59 (52.68%) felt it was very important to have a leadership development program, 44 (39.29%) felt it was somewhat important, 6 (5.36%) felt it was not important, and 3 (2.68%) did not know.

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When participants were asked to evaluate their institutions approach to the development of women leaders, 29 (26.13%), participants indicated no programs were available, 43 (38.74%) indicated some programs are available, 43 (38.74%) participants indicated that some programs were available, 6 (5.41%) indicated programs are being developed, 11 (9.91%) offered targeted programs for women, and 22 (19.82%) replied don't know.

When participants were asked about the effectiveness of leadership programs at their institution, 5 (4.72%) participants indicated they were not effective, 28 (26.42%) indicated they were moderately effective, 4 (3.77%) indicated they were very effective, 20 (18.87%) they had no leadership programs for women, and 49 (46.23%) indicated they didn't know.

In summary, to the institutional culture of leadership development, participants indicated that leadership development is an important initiative, but the process of moving theory to practice is a challenge. Participants indicated that there is a lack of resources, opportunities, awareness and effectiveness of these programs.

Research Questions Related to Challenges for Women

B. Practices for women in orthopaedics shoulder consider challenges expressed throughout the profession. This section was addressed with the following research question.

Research Question 2: In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional isolation, promotion and

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equal salary, accommodations, recruitment and retainment? To address this research question participants were asked seven questions related to challenges and barriers women experience when seeking promotion. For questions 10-15, participants were asked to rate each question on a scale from 1 (poor), 2 (fair), 3 (good), 4 (excellent), and a Not Applicable (NA) option. For question 16, participants were asked to rate barriers on a scale from 1 (no barriers), 2 (slight barrier), 3 (moderate barrier), 4 (extreme barrier), and a Not Applicable (NA) option.

Question ten asked participants to rate their institution's efforts to develop women leaders. This question contained six sub-categories, recruitment, retainment, having enough women in the pipeline, work-life balance, accelerating the development of women leaders, and having women develop the full range of skills necessary for promotion. The data provides better understanding of institutional structure and progress in regards to the development of women leaders. There were two interesting findings for this question, which are contrary to the literature, the mean value was higher in regards to the institution's efforts to recruit women and having a work-life balance that attracts women. The mean value was the lowest in regards to having enough women in the pipeline and accelerating the development of women. These findings were compatible to the literature. Table 6 contains the mean responses, frequencies, and percentages related to each question.

Table 6. Leadership Challenges for Women (Section 3: Question 10)

How would you rate your institutions performance on the following efforts to develop women leaders?						
	Poor (1)	Fair (2)	Good (3)	Excellent (4)	NA	Total	Mean
Recruitment of women	9.09% 8	29.55% 26	38.64% 34	22.73% 20	1.12% 1	88	2.75
Retaining women so they aspire to leadership levels	13.79% 12	39.08% 34	24.14% 21	22.99% 20	1.14% 1	87	2.56
Having enough women in the leadership pipeline	28.41% 25	37.50% 33	21.59% 19	12.50% 11	1.12% 1	88	2.18
Having a work-life balance that attracts women	12.79% 11	34.88% 30	43.02% 37	9.30% 8	3.37% 3	86	2.49
Accelerating the development of women with early-career high potential	20.48% 17	43.37% 36	31.33% 26	4.82% 4	6.74% 6	83	2.20
Having women develop the full range of skills necessary for promotion	15.12% 13	38.37% 33	36.05% 31	10.47% 9	3.37% 3	86	2.42

Note 1. N=117 and missing data= (28, 29, 28, 28, 28, 28)
Note 2. The mean was calculated on the responses Poor (1), Fair (2), Good (3), and Excellent (4) only.

Question 11, 12, and 13 discuss challenges in regards to gender equity. Gender

equity does not just refer to the number of women, but also their experience and

perception of their environment (Boushey, 2009). Question 11 asked participants how

they would rate their institution's performance on offering equal pay for female

orthopaedic surgeons. Seventeen (19.54%) participants indicated they felt their

institutions did an excellent job, 23 (32.18%) indicated good, 15 (17.24%) indicated fair, 13 (14.94%) indicated poor, and 14 (16.09%) replied not applicable. The mean response was 2.90.

Question 12 asked participants how they would rate their institution's performance on minimizing gender bias. Thirteen (14.94%) participants indicated their institutions did an excellent job minimizing gender bias, 35 (40.23%) indicated good, 27 (31.03%) indicated fair, 11 (12.64%) indicated poor, and one person replied not applicable. It is important to view gender equality as not just an academic exercise, but a practice that can influence systems and policies.

Question 13 asked participants how they would rate the efforts, if any, that their institutions had implemented to reduce gender bias. This question contained six sub-questions in regards to diversity efforts, skill-building, inclusion, coaching programs, gender quotas and systematic requirements. The data provides a better understanding of institutional culture and progress in regards to gender bias. An interesting finding from the data was that approximately 40% of the participants responded "not applicable" or skipped the question. Another interesting finding was that the mean values was lower for this question than compared to other questions. Question Table 7 contains the mean responses, frequencies, and percentages related to each question.

Table 7. Leadership Challenges for Women (Section 3: Question 13)

	Poor (1)	Fair (2)	Good (3)	Excellent (4)	N/A	Total	Mean
How would you rate the efforts, if any, that your institution has implemented to reduce gender bias?							
Oversight by Dean to increase gender diversity efforts	21.54% 14	35.38% 23	29.23% 19	13.85% 9	26.97% 24	65	2.35
Offer skill-building programs developed specifically for women	30.65% 19	35.48% 22	25.81% 16	8.06% 5	30.34% 27	62	2.11
Inclusion of gender diversity indicators in executive performance reviews	42.55% 20	34.04% 16	17.02% 8	6.38% 3	46.59% 41	47	1.87
Offer coaching programs specifically for women	48.28% 28	27.59% 16	18.97% 11	5.17% 3	34.83% 32	58	1.81
Seek gender quotas for hiring, retaining, promoting, or developing women	46.43% 26	28.57% 16	19.64% 11	5.36% 3	36.36% 32	56	1.84
Systematic requirement that at least one female candidate be in each promotion pool	54.17% 26	18.75% 9	20.83% 10	6.25% 3	44.83% 39	48	1.85

Note 1. N=117 and missing data= (28, 28, 29, 27, 27, 29, 30).
Note 2. The mean was calculated on the responses Poor (1), Fair (2), Good (3), and Excellent (4) only.

Below are the open-ended responses/comments that are presented for section three (3) Leadership Challenges, question 13.

> *I don't think this is a wise strategy anyways.*
>
> *Every opportunity has been self-initiated.*
>
> *I don't know much about recruiting efforts of the hospital.*
>
> *Unable to get females interested.*
>
> *None of the above exist at my institution.*
>
> *Don't know*
>
> *Selected out women to promote is no better than selected to not. True inclusion is a community where everyone is comfortable and is taught and encouraged in advance.*

In summary, the overall theme of the comment section was that there needs to be advocacy and engagement at the institutional level for gender equality.

Question 14 asked participants how they would rate the efforts, if any, that their institutions had implemented to reduce social and professional isolation. This question contained three sub-questions, networking, communication, and mentorship programs. The mean value for this section hovered below 2.5, with a large number of participants indicating their institutions have done a fair or good job at reducing social and professional isolation. Table 8 contains the mean responses, frequencies, and percentages related to each question.

Table 8. Leadership Challenges for Women (Section 3: Question 14)

How would you rate the efforts, if any, that your institution has done to reduce social and professional isolation?						
	Poor (1)	Fair (2)	Good (3)	Excellent (4)	N/A	Total	Mean
Programs to encourage female networking and role models	22.35% 19	31.76% 27	35.29% 30	10.59% 9	5.56% 5	85	2.34
Communication inclusion	18.82% 16	25.88% 22	48.24% 41	7.06% 6	4.49% 4	85	2.44
Offer mentorship programs	28.57% 24	36.90% 31	25.00% 21	9.52% 8	6.67% 6	84	2.15

Note 1. N=117 and missing data= (27, 28, 27).
Note 2. The mean was calculated on the responses Poor (1), Fair (2), Good (3), and Excellent (4) only.

Below are the open-ended responses that are presented for section three (3)

Leadership Challenges, question 14.

> *We have leadership training available, but specifically for women. We have a*
>
> *number of women on staff.*
>
> *No formal programs that I know of for ortho.*
>
> *Mentorship program present for all residents, but no female faculty.*
>
> *Our department has multiple female faculty members including in leadership*
>
> *positions. I feel that they offer leadership training based on merit and not based on*
>
> *gender.*
>
> *The institution as a whole is better than the department of orthopaedics.*

In summary, the overall theme of the comment section was that there is a need

for advocacy for women in orthopaedic surgery to reduce social and professional

isolation.

Question 15 asked participants how they would rate the efforts, if any, that their institutions have implemented to provide accommodations for women. This question contained four sub-questions, flexible working arrangements, support, evaluation systems, and transitions all related to working mothers. An interesting finding was that the mean values were lower and similar to the gender bias question results. Table 9 contains the mean responses, frequencies, and percentages related to each question.

Table 9. Leadership Challenges for Women (Section 3: Question 15)

How would you rate the efforts, if any, that your institution has implemented to provide accommodations for women?							
	Poor (1)	Fair (2)	Good (3)	Excellent (4)	N/A	Total	Mean
Offer flexible working arrangements	32.94% 28	29.41% 25	30.59% 26	7.06% 6	3.41% 3	85	2.12
Offer support programs and facilities to help reconcile work and family life	42.31% 33	32.05% 25	20.51% 16	5.13% 4	11.36% 10	78	1.88
Performance evaluation systems that neutralize the impact of parental leaves or flexible working	36.99% 27	32.88% 24	24.66% 18	5.48% 4	17.05% 15	73	1.99
Programs to smooth transitions before, during, and after prenatal leaves	44.59% 33	29.73% 22	21.62% 16	4.05% 3	15.91% 14	74	1.85

Note 1. N=117 and missing data= (29, 29, 29, 29).
Note 2. The mean was calculated on the responses Poor (1), Fair (2), Good (3), and Excellent (4) only.

Below are the open-ended responses presented for section two (3) Leadership

Challenges, question 15.

No maternity leave policy.

None that I know of.

Have not been here long enough to evaluate family time.

My department still does not have a maternity leave policy 17 months after I gave

birth to #2. I came back at 4 weeks because no one could cross-cover my patients.

There was no administrative support.

When I was up for promotion, my chair did not use maternity leave against me

when looking at my RVU's. I feel like that alone is pretty amazing.

Unsure as I do not have children.

In summary, the overall theme of the comment section was that there is a

need for advocacy to implement accommodations for working mothers.

Question 16 asked participants to rate the following barriers, if any, preventing

women from advancing in their career. This question listed barriers that were similar to

Tosi & Mankin's (1998) study. A key finding was that the requirement for scholarly

activity was perceived as not a barrier or less of a barrier to advancement, which is

contrary to the literature. The highest mean was found for lack of pro-family policies,

which supports the literature. The second highest mean was found for women not

being in the pipe-long long enough, which supports the significance of the study. Table

10 contains the mean responses, frequencies, and percentages related to each barrier.

Table 10. Leadership Challenges for Women (Section 3: Question 16)

How would you rate the following barriers, if any, preventing women from advancing in their career?						
	Not a barrier (1)	Slight barrier (2)	Moderate barrier (3)	Extreme barrier (4)	N/A	Total	Mean
Lack of a mentor	16.09% 14	32.18% 28	35.63% 31	16.09% 14	1.14% 1	87	2.52
Absence of women role models	19.32% 17	25.00% 22	37.50% 33	18.18% 16	1.12% 1	88	2.55
Women not being in the pipeline long enough	10.34% 9	34.48% 30	42.53% 37	12.64% 11	2.25% 2	87	2.57
Lack of significant experience	23.81% 20	38.10% 32	29.76% 25	8.33% 7	5.62% 5	84	2.23
Exclusion from informal communication networks	23.53% 20	31.76% 27	21.18% 18	23.53% 20	3.41% 3	85	2.45
Requirement of scholarly activity	44.05% 37	28.57% 24	22.62% 19	4.76% 4	5.62% 5	84	1.88
Lack of pro-family policies to support services (e.g., childcare, leave policies)	9.30% 8	37.21% 32	33.72% 29	19.77% 17	3.37% 3	86	2.64

Note 1. N=117 and missing data= (29, 28, 28, 28, 28, 28, 28).
Note 2. The mean was calculated on the responses Not a barrier (1), Slight barrier (2), Moderate barrier (3), and Extreme barrier (4) only.

Below are the open-ended responses presented for section three (3) Leadership

Challenges, question 16.

> *Requirement for scholarly activity is a requirement for all – not just women – and*
>
> *is a barrier to advancement for all sexes.*

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> *Pro-family policies affect families, not just female surgeons. Or they out to.*
>
> *Reframe the conversation.*

In summary, the overall theme of the comment section was that advancing careers and pro-family policies are an issue for both men and women.

Research Questions Related to Leadership Maintenance

C. Practices for women in orthopaedics should offer guidance and support for leadership development. This section was addressed with the following research question.

Research Question 3: In what ways do female orthopaedic surgeons feel institutions are effective at maintaining supportive environments, so that women can develop into leaders? To address this research question participants were asked three questions related to their institution's effectiveness at maintaining supportive environments so that women can develop into leaders. For questions 17-19, participants were asked to rate each question on a scale from 1 (poor), 2 (fair), 3 (good), 4 (excellent), and a Not Applicable (NA) option.

Question 17 asked participants to rate their institution's talent pools for women leaders in academic medicine. Thirteen (15.29) participants indicated their institutions had an excellent talent pool, 28 (32.94%) indicated it was good, 24 (28.24%) indicated it was fair, 16 (18.82%) indicated it was poor, and 4 (4.71%) indicated Not Applicable. The mean response was 2.73.

Question 18 asked participants to rate how effective they felt their institutions were at retaining women once they reach leadership positions. Ten (11.76%)

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participants indicated their institutions did an excellent job at retaining women once they reach leadership positions, 31 (36.47%) indicated good, 20 (23.53) indicated fair, 13 (15.29%) indicated poor, and 11 (12.94) indicated Not Applicable. The mean response was 2.65.

Question 19 asked participants to rate how their institutional leaders perform on the several personal leadership competencies. This category contained six sub-questions in regards to communication, accountability, being adaptive, developing others, leveraging diversity, and creating a shared vision. A key finding of this table was that overall participants rated their institutions fairly high in terms of leadership competencies. Table 11 contains the mean responses, frequencies, and percentages related to each sub-question.

Table 11. Leadership Maintenance (Section 4: Question 19)

How do leaders in your institution perform on the following personal leadership competencies?							
	Poor (1)	Fair (2)	Good (3)	Excellent (4)	N/A	Total	Mean
Communicating effectively	10.59% 9	28.24% 24	47.06% 40	14.12% 12	1.16% 1	86	2.79
Creating a culture of accountability and performance	11.76% 10	23.53% 20	47.06% 40	17.65% 15	1.16% 1	86	2.88
Being adaptive	16.67% 14	23.81% 20	44.05% 37	15.48% 13	2.33% 2	86	2.74
Developing others	14.12% 12	34.12% 29	37.65% 32	14.12% 12	1.16% 1	86	2.66
Leveraging diversity	16.05% 13	37.04% 30	35.80% 29	11.11% 9	4.71% 4	86	2.53
Creating a shared vision	14.12% 12	24.71% 21	47.06% 40	14.12% 12	1.16% 1	86	2.75

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In summary, to the institutional culture of leadership maintenance, participants indicated that maintaining support environments is an important initiative and institutions are progressing.

Research Questions Related to Satisfaction

D. Practices for women in orthopaedics should offer a work-life balance that satisfies both women's ambition and lifestyle. This section was addressed with the following research question.

Research Question 4: Are female orthopaedic surgeons satisfied in academic medicine? To address this research question, participants were asked whether or not women are satisfied with other areas within their institution. This category contained 4 sub-questions in regards to continuing education, training opportunities, vacation and personal leave, opportunities for promotion and work-life balance. For question 20, participants were asked to rate their satisfaction on a scale from 1 (dissatisfied), 2 (somewhat satisfied), 3 (neutral), 4 (very satisfied), or Not Applicable (NA). A key finding was that a large number of participants stated they were very satisfied with the amount of benefits they receive (vacation, sick, and personal days), but a large portion of participants indicated there was less opportunity for wage increases (promotion, raises, and bonuses). Table 12 contains the mean responses, standard deviation, frequencies, and percentages related to each question.

Table 12. Satisfaction (Section 5: Question 20)

| | How satisfied are you with the following at your institution? | | | | | | |
	Dissatisfied (1)	Somewhat satisfied (2)	Neutral (3)	Very satisfied (4)	N/A	Total	Mean
Continuing education and training opportunities	5.75% 5	20.69% 18	27.59% 24	45.98% 40	0.00% 0	87	3.14
The amount of vacation, sick, and personal days that I receive	4.82% 4	15.66% 13	33.73% 28	45.78% 38	4.60% 4	83	3.20
Opportunities for promotion, raises, and bonuses	16.44% 12	20.55% 15	31.51% 23	31.51% 23	16.09% 14	73	2.78
Work-life balance	13.25% 11	28.92% 24	31.33% 26	26.51% 22	3.49% 3	83	2.71

Note 1. N=117 and missing data= (30, 30, 30, 31).
Note 2. The mean was calculated on the responses Poor (1), Fair (2), Good (3), and Excellent (4) only.

In summary, participants indicated that overall they were fairly satisfied with key factors that might affect employee turnover.

Open-Ended Responses for the Survey

Question 21 allowed participants the opportunity to respond freely to the questions presented in the survey. Participant responses are organized below based on themes found through the use of coding. The transcription of the responses can be found in Appendix E. From the 21 replies, two categories were identified from the text analysis: (1) concerns and (2) institutional differences.

In conclusion, several participants indicated that female orthopaedic surgeons are still a young group and that there is inherent gender bias throughout the specialty. Institutional difference was a second theme throughout the open comments section. Many participants indicated they were either from a community hospital, private practice, specialty hospital, or an academic institution. In their case, leadership development was stunted or did not exist as readily as it does in academic institutions. Both of these concerns may inform the findings of the survey.

Summary

In this chapter the results of the data analysis were presented in response to the research questions presented in chapter one. A fundamental goal was derived from the research method, which was to develop a knowledge base on the perceptions of women in orthopaedic surgery on leadership development within their institutions. This objective was accomplished. The findings presented in this chapter support the development of leadership programs and will be further discussed in chapter five.

CHAPTER FIVE:

CONCLUSION

This section summarizes the results of this study. The chapter begins with a brief overview of the background, literature review, methods, and results presented previously. The second section is an interpretation of the results. The third section focuses on the implications of this study. The final section contains suggestions for future research.

Overview

The field of medicine is changing. With almost an equal number of women graduating from medical school, the number of women entering into orthopaedic surgery lags behind all other sub-specialties. Although, advancements in technology have leveled the playing field and have created opportunities for women to become successful orthopaedic surgeons, fewer women seek out this profession than other surgical subspecialties. At a recent American Academy of Orthopaedic Surgeons meeting in March 2016, it was reported that the lack of exposure to female role models may be a contributor to the lack of female orthopaedic surgeons. At the meeting, it was also noted that by improving workforce diversity, healthcare disparities will also improve amongst women and minorities (Orthopaedics Today, 2016). This idea was further strengthened by a Teuscher and Cannada (2016) that when younger women see other successful female orthopaedic surgeons, they can envision themselves in this role.

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With this in mind a survey was created to explore perceptions of women in orthopaedic medicine on leadership development.

The purpose of this study was to identify attitudes towards leadership development, analyze relationships between women orthopaedic surgeons and institutions, and explore women in medicine trends as a way to inform future studies and increase the number of women in orthopaedic surgery. Exploration was important because there is a limited amount of information available on women leaders in orthopaedic surgery. In this study, a large number of the majority women had insufficient exposure to leadership development, through coursework, workshops and professional development.

The literature related to leadership in medicine and women in orthopaedic surgery is sparse. However, leadership trends suggest that mentors and senior administrators were identified as key individuals who make policy changes to increase and advance minority groups such as women in orthopaedic surgery. In the literature, six key areas of improvement were identified among the profession that may discourage women from seeking out this profession: (1) mentoring, (2) gender bias, (3) social and professional isolation, (4) promotion and equal salary (5) accommodations for family, (6) and recruitment efforts (Tosi and Mankin, 1998 and Bickel et al., 2002). A newly modified survey was created to readdress these issues.

The survey addressed each of the six key areas of improvement. Mentoring is a career development resource for both men and women. A mentor can be a key element to success (Sanfey, Hollands, and Gantt, 2013). Gender bias is another concern found

frequently in the existing literature. Gender bias occurs when women are unequally treated in the medical profession. Another concern identified in the literature is social and professional isolation. Social and professional isolation arises when a member is excluded from activities in which other group members participate in (Dussault, Deaudelin, Royer, and Loiselle, 1999). Promotion and equal salary for women is another area of concern found in the literature. The research indicated that women receive lower salaries than their male colleagues even though they have completed the same training, see the same number of patients, publish the same amount of papers, and perform the same number of surgeries (Jagsi, Griffith, Stewart, Sambuco, DeCastro, & Ubel 2014). Pro-family accommodations was another area that was researched and a concern for both women and men and the research indicated it is still a concern. There are many opportunities for institutions to enhance family work life for both men and women (Boulis & Jacobs, p. 8). The last area that was investigated was recruitment. Despite the increase in the number of women graduating from medical school, there remains a disparity in the number of women in orthopaedic academic medicine (Porucznik, 2008). Each of these areas were taken into account when the survey was developed.

The Group on Women in Medicine and Science (GWIMS) and the American Academy of Medical Colleges (AAMC) suggests the need for policy improvement, but specific practices are unclear for leadership development. The employment of women in medicine demonstrates progress. Additionally, there appears to be limited guidelines for leadership development, specifically for women.

Therefore, the purpose of this study was to explore leadership trends in order to inform future studies and the development of leadership programs. The study examined female orthopaedic surgeon's attitudes towards leadership development in relation to the six key areas for improvement (Tosi & Mankin, 1999). This study's development and analysis were influenced by critical theory. This research study employed an electronic questionnaire via Survey Monkey to collect quantitative data. The questionnaire had four sections designed to address the following research questions:

A. Practices for women in orthopaedics should be implemented at the institutional level.

 Research Question 1: In what ways do female orthopaedic surgeons feel institutions support the development of women leaders?

B. Practices that women in orthopaedics should consider challenges and barriers expressed throughout the profession.

 Research Question 2: In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional isolation, promotion and equal salary, accommodations, recruitment and retainment?

C. Practices for women in orthopaedics should offer guidance and support for leadership development.

Research Question 3: In what ways do female orthopaedic surgeons feel

institutions are effective at maintaining supportive environments, so that

women can develop into leaders?

D. Practices for women in orthopaedics should offer a work-life balance that

satisfies both women's ambition and lifestyle.

Research Question 4: Are female orthopaedic surgeons satisfied in

academic medicine?

This study used random sampling strategies, in which participants were asked to

forward the survey onto peers in the profession. The participants were recruited

electronically and no identifying information was collected. Data collection

commenced on July 1 for six weeks and a total of 117 surveys were used in the data

analyses.

Interpretation of Results

This was an investigative study with the purpose of identifying perceptions of

women in orthopaedic surgery in regards to leadership development. Results from the

data collection were used to address the research questions. Critical theory influenced

the interpretation of the results. Critical theory focuses on social issues such as

inequality and power. Support of the theory is reflected in the interpretation and

recommendations for future studies. The following is an interpretation of the results in

regards to each research question.

In regards to the demographics section one (1). The majority of the participants were

relatively young, with 91 (78.45%) participants between the ages of 25 and 44, who are

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in the beginning stages of practice. Twenty-six (21.55%) participants were over the age of 45 and have completed either a residency or fellowship program. Question one correlates with question five, length of time at your institution, with the majority of the participants (79.48%) at their institution less than 7 years. In regards to academic title, the responses were consistent with the AAMC GWIMS 2014 report, with a large number of participants indicating they were at the assistant professor level and the fewest number of participants indicated they were at the professor level.

Research Questions Related to Leadership Development

     A. Practices for women in orthopaedics should be implemented at the institutional level. This section was addressed with the following research question.

     Research Question 1: In what ways do female orthopaedic surgeons feel institutions support the development of women leaders? While women leaders in other academic programs such as pediatrics and neurology have increased, women leaders in orthopaedic medicine have remained relatively the same since 2001 (AAMC, 2012). This section looked at the institutional culture of women in orthopaedic surgery.

     Leadership development is a key metric for transforming an organization and the leader is the key to facilitating change (Bolman and Deal, 2008). With new trends in leadership, such as collaborative decision making and transformation leadership, this study looked at perspectives of women on leadership development programs. To address this research question participants were asked four questions related to institutional culture and leadership development, in section two of the survey. The data analysis showed that many of the participants felt it was very important or

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somewhat important to have a leadership development program at their institution. A large number of the participants felt their institutions also thought it was either very important or somewhat important to develop leadership programs, yet the numbers decrease in relation to the need for developing women leaders, creating a vision that includes women leaders, and institutionalizing change. When participants were asked to evaluate their institutions approach to the development of leaders the responses became less enthusiastic, a large number of participants indicated there are either no programs available or they were not aware of any programs. Lastly, the majority of the participants (96.24%) either felt programs were not effective or they weren't aware of leadership programs. Although most of the participants agreed that their institutions felt the need to develop leadership programs, few institutions have developed a strategy to meet this need.

With new expectations for physician leaders, institutions should reevaluate their leadership development programs and invest in developing physician leaders. Participants indicated that leadership development is an important initiative, but the process of moving from theory to practice is a challenge. There is a lack of resources, opportunities, awareness and effectiveness of these programs. The research supports the need for advocacy and activism for leadership development that incorporates gender-balanced programs.

Research Questions Related to Challenges for Women

B. Practices for women in orthopaedics should consider challenges

expressed throughout the profession. This section was addressed with the following research question.

Research Question 2*:* In what ways do female orthopaedic surgeons feel institutions have responded to challenges for women in orthopaedics, such as mentoring for women, gender bias, social and professional isolation, promotion and equal salary, accommodations, recruitment and retainment? To address this research question participants were asked seven questions related to challenges and barriers women experience when seeking promotion. This was the largest section of the survey.

As identified earlier in the literature review, feminism is the advocacy of women's rights in regards to equal political, social, and economic rights (Boushey, 2009). Though a lot of progress has been made in regards to equal rights for women, more advocacy needs to go towards challenging not only governments, but the institutions themselves to create policies that promote feminism (Boushey, 2009). In regards to institutional performance, most of the participants (38.64%) felt their institutions did a good job recruiting women into orthopaedics. This was a comforting find as the literature suggests that women have a negative perception of orthopaedic surgery and have lost faith in gender equality (Compton, 2015). However, many of the participants felt their institutions did a poor job retaining women so they aspire to leadership levels. A large number of participants also felt their institutions did a poor job of having enough women in the leadership pipeline. The research supports the need to reexamine employee sustainability. Retaining and growing valued employees is a benefit for institutions (Bolman & Deal, 2008). Maintaining teams in the healthcare

field is critical to team functioning, productivity, morale, patient care, and reduces turnover costs to the institution (Bolman & Deal, 2008). A large number of the participants (43.37%) felt that their institutions did a fair job at accelerating the development of women and having women develop the full range of skills necessary for promotion. As Bolman & Deal (2008) suggest when individuals feel mistreated or oppressed, both the institution and the employee suffer. Therefore, more training could benefit both the employee and institution.

As stated in the literature review, inequality can be very disheartening for women who put their personal lives on hold to start a career and care for others, specifically in regards to gender bias (Ash, et al., 2004). Gender bias comes in many forms, equal pay, promotion, recruitment, benefits, etc. In regards to institutional performance on offering equal pay for female orthopaedic surgeons many of the participants (32.18%) felt their institutions did a good job, which is contrary to what the literature suggests.

In regards to institutional performance on minimizing gender bias, a large number of the participants felt their institutions did a good job. But, when asked to rate their institution's performance on initiatives to reduce gender bias such as oversight by the dean and offering skill-building programs developed specifically for women, most of the participants (35%) felt their institutions were doing a fair job. Almost half or more of the participants (42-54%) felt their institutions did a poor job at including gender diversity indicators, offering coaching programs, seeking gender quotas, and requiring at least one female candidates in the promotion pool. Gender equality does

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not just refer to the number of women, but also their experience and perception of their environment (Boushey, 2009). From the data, gender bias, is an area that can be improved upon greatly.

In regards to institutions reducing social and professional isolation, a large number of the participants felt their institutions did a good job at encouraging networking and communication inclusion, but most participants felt that their institutions did a poor to fair job at offering mentorship programs. The research supports that there is a need for advocacy for women in orthopaedic surgery to reduce social and professional isolation.

In regards to institutions providing accommodations for women most of the participants felt their institutions did a poor job of offering flexible working arrangements, offering support programs, performance evaluations that neutralize the impact of parental leave, and offering programs to smooth transition before, during, and after parental leaves. The research supports that there is a need for advocacy for to create policies to support working mothers.

In regards to barriers that may prevent women from advancing their career, a large number of participants (44%) indicated that the requirement for scholarly activity was perceived as not a barrier to advancement, which is contrary to the literature. Most of the participants indicated that the lack of a mentor, absence of women role models, and women not being in the pipeline long enough, were the number one issues that hinders advancement, which supports the literature. It is important to note one

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participant felt very strongly and commented that this is not just a woman's issue, but a dual-career family issue.

Research Questions Related to Leadership Maintenance

C. Practices for women in orthopaedics should offer guidance and support for leadership development. This section was addressed with the following research question.

Research Question 3: In what ways do female orthopaedic surgeons feel institutions are effective at maintaining supportive environments, so that women can develop into leaders? To address this research question participants were asked three questions related to their institution's effectiveness at maintaining supportive environments so that women can develop into leaders.

The demand for physician leaders who cannot only provide cost-effective and optimal patient care, but who can also successfully lead and manage their practice is increasing (Satiani, 2016). With the proliferation of women into medicine, the need to develop women leaders is a crucial stage for institutions (Compton, 2015). This section investigated the institutional environment. In regards to how women felt about the institutional talent pool, it was encouraging to see a large number of the participants felt that their institutions had a good talent pool for women leaders in orthopaedic medicine. Additionally, many of the participants felt their institutions were equally good at retaining women once they reach leadership levels.

In regards to how participants felt about their leaders in their institutions, almost half of the participants felt leaders in their institutions did a good job communicating

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effectively, creating a culture of accountability, being adaptive, developing others, and creating a shared vision. However, a large number of the participants (37%) rated leaders fair at leveraging diversity. These are concepts that institutions can further develop through their vision. As Kotter (1996) states to lead an institution through change, a leader must develop a vision that encompasses three important purposes; clarify the general direction, motivate people to take action, and align individuals. By breaking down barriers and demystifying stereotypes employees may feel more empowered to make a difference, to seek out leadership development opportunities, and to enhance faculty diversity.

In summary, participants indicated that maintaining support environments is an important initiative and institutions are progressing in this regards.

Research Questions Related to Satisfaction

D. Practices for women in orthopaedics should offer a work-life balance that satisfies both women's ambition and lifestyle. This section was addressed with the following research question.

Research Question 4: Are female orthopaedic surgeons satisfied in academic medicine? To address this research question participants were asked whether or not women are satisfied with other areas within their institution. There is very little literature on the satisfaction of women in orthopaedic surgery. However, the literature suggests that job satisfaction can lead to employee sustainability and lower turnover costs paid by the institution. This part of the survey was an opportunity to look beyond the myths as to why fewer women are interested in orthopaedic surgery. The area of

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continuing education and training was investigated because healthcare education is the key to improving patient outcomes and ensures employee competency. Almost half of the participants (46%) stated that they were very satisfied with their continuing education and training opportunities at their institution.

The area of vacation, sick and personal days was investigated because these are an important employees benefit and part of the overall compensation packet for physicians. A large number of the participants (44%) stated that they were very satisfied with the amount of vacation, sick, and personal days that they receive.

The areas of promotion, raises, and bonuses were investigated because they are not only an important part of the compensation package, but they help motivate employees to continue to work hard and not be lured away by other institutions. The survey reported that the numbers decrease in regards to opportunities for promotion, raises, and bonuses. Only 31% of participants stated that they felt very satisfied about opportunities for wage increases at their institutions. Promotions, raises, and bonuses are the lifeblood of institutional retention (Allen, 2000). This maybe an opportunity for institutions to narrow the gender pay gap. The research supports the advocacy for equal pay.

The area of work-life balance was investigated because employees who are more satisfied with their work-life balance tend to be less susceptible to burnout and experience fewer health problems. Boulis and Jacobs (p.8) stated, becoming a physician is demanding, yet there are opportunities for institutions to enhance work-life balance for both men and women. Only (26%) of participants felt very satisfied with their work-

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life balance, which is contrary to what most participants (42%) indicated earlier in the study, that institutions did a good job at having a work-life balance that attracts women, The research supports the need to investigate and advocate for work-life balance.

In summary, this research project revisited Tosi and Mankin's (1998) study on *Ensuring the Success of Women in Academic Orthopaedics* and investigated what institutions are doing to advance women leaders in orthopaedic medicine as little progress has been made over the past several decades. The new survey combined modified questions from the University of North Carolina's Kenan-Flagler Business School (2012) UNC's Leadership Survey 2012: Women in Business, which addressed current organizational culture, the development of women leaders, and addressed six areas of improvement; lack of mentoring, gender bias, social and professional isolation, promotion and equal salary, accommodations for family, and poor recruitment efforts. The intent of the new survey was to gather current perspectives of women in orthopaedic surgery to hopefully influence future research as well as create policies and practices that will ensure the success of these women.

Implications

It is important for institutions to provide leadership programs that focus on the strategic agenda, vision, and transformational leadership (Pennings, 2007). Leadership development programs should be designed to bring individuals from various groups and backgrounds together to share their experiences (Bolman & Deal, 2008). This research revealed a few recommendations for practice:

1. Create a leadership development program that incorporates health policy,

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business acumen, interpersonal skills, healthcare leadership, and organization management, which could lead to more cost-effective and optimal care for patients (Satiani, 2016).

2. Develop an institutional tool-kit for those interested in leadership that encompasses presentations and or material designed for women to leverage their careers.

Physician leaders perform a large range of roles. They must be patient advocates, administrators, instructors, researchers, budget experts, leaders, and great clinicians. With the impact of globalization and the approval of the Patient Protection and Affordable Patient Care Act of 2010, societal and cultural needs of patients are changing (Bickel et al., 2002). Creating leadership programs and online tool-kits may offer a variety of opportunities for aspiring and practicing leaders. The physician leader is an integral part of the academic institution and more effective leaders are more productive.

Future Research

In the last decade, the interest in physician leadership development has increased, however, few studies have been conducted to compare male and female experiences as academic heads of medical departments. By conducting a comparative study of male and female leadership experiences and challenges, I will be able to analyze and identify common and different characteristics. A comparative study may help widen the scope of the study to perhaps validate findings and or explore trends across institutions. More research may help asses institutional weaknesses or areas of

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improvement in regards to leadership development as well as commonalities or differences amongst men's and women's experiences when seeking promotion.

Additionally, a comparative study among different healthcare specialties might reveal strengths, weaknesses, and opportunities which may shed some light on why and how other specialties are ensuring the success of women leaders.

Summary

The research reveals that although there has been some progress in the areas of recruitment and recognizing the need for leadership development, institutions need to advocate for gender equality, pro-family policies, and employee retention. As stated earlier, gender equity does not just refer to the number of women, but also their experience and perception of their environment (Boushey, 2009). Additionally, in analyzing the responses, the data suggest that women may benefit from increased opportunities for advancement and a work place that cultivates diversity as well as offering equal opportunities to all employees.

Lastly, I am happy to report that in a recent study by Teuscher and Cannada (2016), they indicated that the number of female residents has improved more than 40 percent over the last decade, from 67 to 105 active residents in 2015. They outline several areas that pertain to this improvement, such as the creation of 11 subspecialty organizations, a female chairman, The Perry Initiative, mentorship, scholarships, research awards, and additional educational opportunities for young women to be exposed to orthopaedics (Teuscher & Cannada, 2016). The literature suggests that the most important factor is that women attract more women and that institutions are

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making efforts to recruit and retain these valued employees. Although GWIMS has done a phenomenal job tracking women in academic medicine, few resources are available to assist institutions in training women to become leaders. Hopefully, this research will be a springboard for other leadership development studies.

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APPENDICES

Appendix A: Recruitment Email

Greetings.

My name is Ann Joyce and I am working on my doctoral dissertation at the University of South Florida.   I am conducting a research study on the *Perspectives of Women in Orthopaedic Surgery on Leadership Development Pro#23547*. This study may assist institutions in developing a foundation for the advancement of women in orthopaedic surgery. I will be providing results of my survey to AAMC's Group on Women in Medicine and Science.

If you are a female orthopaedic surgeon, I hope you will take a few minutes to complete this survey for this research project. Participation is completely voluntary and your answers will be anonymous and there is no compensation.

If you are interested, please click on the link for the survey and additional information: https://www.surveymonkey.com/r/WT662HT

If you have any questions, please do not hesitate to contact me (ajoyce@health.usf.edu) or by phone 813-253-2068.

Thank you for your time.

Ann Joyce
Principal Investigator
Pro#23547
Doctoral Candidate
University of South Florida

Appendix B: Email Permission from AAMC – GWIMS

Hello Ann,

Thank you so much for contacting us about your project – this is exciting news about your dissertation, what a wonderful topic! I would love to hear more as your research progresses. With all the work we do here regarding specialty-specific diversity benchmarks, it's rewarding to know others are making inroads into these questions, pinpointing the gaps in gender diversity. I'm happy to provide some insight and suggestions below and would be happy to follow up or discuss your research more in depth over the phone if you'd like.

Please feel free to use the Benchmarking Tables found on our website, through the link you included below. Tables with departmental information that will be particularly useful for you will be Tables 2, 3, 4A and 11 (there are 2 tables for Table 11). These tables break down specific resident, faculty, and leadership numbers for all departments, including Orthopedics. The other tables, labeled "Benchmarking" display individual responses per medical school to faculty numbers, new hires, departures, promotions, and other leadership positions. These tables may be helpful for you if you're interested in looking at specific schools or potentially identifying schools that are doing well. Sadly, in terms of orthopedics, not too many are doing that well (there still isn't 1 woman department chair for orthopedics in the country). I would also point you to our summary report of the data found in these tables which can also be found on the same website page as the tables, titled the *State of Women in Academic Medicine Report*. This report gives some additional context for the specialty discrepancies.

In thinking about your research project and a survey effort, I would encourage you to go through these data outlined above to identify what additional information you would want to capture, or what research questions you have that are not collected in these data. Additionally, considering the specialty you are interested in researching, I would also encourage you to think of other health professions that may be impacting the dearth of women in orthopedics. Namely, I'm considering the high percentage of women physical therapists, which is an orthopedic and sports-medicine based health profession that might have a more supportive environment. Just one thought to assist in your thinking as your frame your research questions.

Best,
Diana Lautenberger, M.A.T.
Director
Women in Medicine and Science

Appendix C: GWIMS Distribution of Women M.D. Faculty by Department and Rank, 2014

TABLE 4A: DISTRIBUTION OF WOMEN M.D. FACULTY BY DEPARTMENT AND RANK, 2014

	Women as a Count or Percent of Women and Men M.D. Instructors		Women as a Count or Percent of Women and Men M.D. Assistant Professors		Women as a Count or Percent of Women and Men M.D. Associate Professors		Women as a Count or Percent of Women and Men M.D. Full Professors		Women as a Count or Percent of All Women and Men M.D. Faculty (All Ranks)*	
	N	%	N	%	N	%	N	%	N	%
BASIC SCIENCES										
Anatomy	5	63%	18	27%	11	22%	12	15%	54	24%
Biochemistry	3	33%	26	31%	11	24%	21	18%	63	24%
Microbiology	4	44%	25	37%	11	26%	24	18%	65	25%
Pathology (Basic Science)	15	54%	250	56%	116	40%	102	29%	491	43%
Pharmacology	4	44%	23	40%	8	23%	15	14%	54	25%
Physiology	4	33%	19	36%	10	25%	20	15%	57	23%
Other Basic Sciences	12	36%	103	34%	72	31%	74	18%	271	27%
SUBTOTAL	47	44%	464	43%	239	32%	268	20%	1,055	32%
CLINICAL SCIENCES										
Anesthesiology	302	45%	1,352	38%	355	27%	186	19%	2,216	34%
Dermatology	54	72%	249	60%	80	44%	81	31%	464	50%
Emergency Medicine	141	43%	679	36%	149	25%	58	15%	1,068	32%
Family Practice	176	56%	1,029	50%	299	39%	138	25%	1,665	45%
Internal Medicine	1,491	49%	5,679	42%	1,980	32%	1,187	17%	10,451	35%
Neurology	123	50%	719	43%	237	31%	161	15%	1,251	33%
Obstetrics & Gynecology	308	73%	1,393	66%	421	46%	227	27%	2,377	55%
Ophthalmology	87	38%	335	44%	135	33%	80	14%	657	33%
Orthopedic Surgery	25	15%	199	17%	68	11%	35	5%	330	12%
Otolaryngology	34	40%	148	26%	66	22%	32	9%	283	21%
Pathology (Clinical)	52	53%	464	47%	270	40%	205	22%	1,015	37%
Pediatrics	953	70%	4,472	59%	1,491	46%	968	30%	7,938	52%
Physical Medicine & Rehabilitation	44	45%	229	47%	69	37%	29	23%	372	41%
Psychiatry	308	51%	1,374	48%	340	34%	230	19%	2,265	40%
Public Health & Preventive Medicine	10	50%	88	50%	39	53%	23	31%	163	46%
Radiology	190	38%	1,052	33%	346	28%	280	20%	1,892	30%
Surgery	166	31%	1,057	24%	400	16%	243	8%	1,892	18%
Other Clinical Sciences	11	33%	138	37%	41	24%	47	21%	238	30%
SUBTOTAL	4,475	51%	20,656	43%	6,786	32%	4,210	19%	36,537	36%
OTHER DEPARTMENTS										
Dentistry	0	0%	0	0%	0	0%	0	0%	0	0%
Other Health Professions	1	50%	10	71%	5	38%	4	22%	20	43%
Social Sciences	0	0%	1	100%	0	0%	0	0%	1	50%
Veterinary Sciences	0	0%	0	0%	0	0%	0	0%	0	0%
All Others	4	67%	30	51%	22	44%	7	12%	76	36%
SUBTOTAL	5	63%	41	52%	27	42%	11	14%	97	37%
TOTAL	4,527	51%	21,161	43%	7,052	32%	4,489	19%	37,689	36%

Notes
* The Women as a Count or Percent of All Women and Men M.D. Faculty columns include faculty at unspecified Other ranks.
This table includes all faculty who have an M.D. or equivalent degree, regardless of other doctoral degrees held (including M.D./Ph.D. or D.O.).
As an example of how to interpret this table, the 63% figure for Anatomy under Women as a Percent of Women and Men M.D. Instructors indicates that of all women and men Instructors in Anatomy departments with an M.D. or equivalent degree as of May 2014, 63% were women.
Source: AAMC Faculty Roster, May 2014
Staff Contact: Tai Pham, tpham@aamc.org

Appendix D: IRB Approval

USF UNIVERSITY OF SOUTH FLORIDA arc

IRB Study Processing Completed

To: Ann Joyce

Re: Perspectives of women in Orthopaedic Surgery on Leadership Development

PI: Ann Joyce

Link: Pro00023547

You are receiving this notification because processing has been completed on the above-listed study. For more information, please navigate to the project workspace by clicking the Link above.

Please note, as per USF IRB Policy 303, "Once the Exempt determination is made, the application is closed in eIRB. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change."

If alterations are made to the study design that change the review category from Exempt (i.e., adding a focus group, access to identifying information, adding a vulnerable population, or an intervention), these changes require a new application. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project. Again, your research may continue as planned; only a change in the study design that would affect the exempt determination requires a new submission to the IRB.

Appendix E: Survey

Perspectives of Women in Orthopaedic Medicine on Leadership Development

Welcome to My Survey

Thank you for participating in our survey. Your feedback is

important. Purpose:
This survey may assist institutions in developing a foundation for the advancement of women in orthopaedic medicine.

Participants:
We are asking you to take part in this research study because you are a woman in orthopaedic medicine.

Procedure:
If you take part in this study, you will be asked to complete an anonymous online survey, which should take no more than 10 minutes of your time. You are welcome to withdraw from the study at any time.

Contact:
If you have questions regarding the research, please contact the Principal Investigator at ajoyce@health.usf.edu.

Perspectives of Women in Orthopaedic Surgery on Leadership Development						
Demographics						
1.	What is your age?	25-35	35-45	45-55	55-65	Opt out
2.	Have you completed an orthopaedic residency program?	Yes	No			
3.	Have you completed a fellowship? If yes, in what sub-specialty	Yes	No	Sub-specialty		
4.	Which of the following best describes your title at your institution?	Instructor	Assistant Professor	Associate Professor	Professor	Other (please specify)
5.	How long have you been at your institution?	1-3 years	4-7 years	8-11 years	16 or more years	
RQ-1	**Leadership Development (Section 2: Questions 6-9)**					
6.	How important do you think these characteristics are to your institution?					
	o Recognizing the need for developing leadership programs	Not Important	Somewhat Important	Very Important	Don't know	N/A
	o Recognizing the need for increasing women leaders	Not Important	Somewhat Important	Very Important	Don't know	N/A
	o Creating a new vision that includes the development of women leaders	Not Important	Somewhat Important	Very Important	Don't know	N/A
	o Institutionalizing change to accomplish the vision	Not Important	Somewhat Important	Very Important	Don't know	N/A

7.	How important is it to YOU to have a leadership program at your institution?	Not Important	Somewhat Important	Very Important	Don't know	N/A
8.	Which of the following best describes your institution's approach to the development of women leaders?	No programs available	Some programs available	Programs are being developed	Offers targeted program for women	Don't know
9.	If you have leadership programs for women in your institution, how effective are they?	Not at all effective	Moderately effective	Very effective	No leadership program for women	Don't know
RQ -2	**Leadership Challenges for Women (Section 3: Questions 10-16)**					
10.	How would you rate your institution's performance on the following efforts to develop women leaders?					
	o Recruitment of women	Poor	Fair	Good	Very Good	Excellent
	o Retaining women so that they reach leadership levels.	Poor	Fair	Good	Very Good	Excellent
	o Having enough women in leadership pipeline.	Poor	Fair	Good	Very Good	Excellent
	o Having work-life programs that attract women.	Poor	Fair	Good	Very Good	Excellent
	o Accelerating the development of women with early-career high potential.	Poor	Fair	Good	Very Good	Excellent
	o Having women develop the full range of skills necessary for a senior leadership position.	Poor	Fair	Good	Very Good	Excellent
11.	How would you rate your company's performance on offering equal pay for female orthopedic surgeons?	Poor	Fair	Good	Very Good	Excellent

12.	How would you rate your institutions performance on minimizing gender bias?	Poor	Fair	Good	Very Good	Excellent
13.	How would you rate the efforts, if any, that your institution has implemented to reduce gender bias?					
	o Oversight by Dean to increase gender diversity efforts	Poor	Fair	Good	Very Good	Excellent
	o Offers skill-building programs developed specifically for women	Poor	Fair	Good	Very Good	Excellent
	o Inclusion of gender diversity indicators in executives performance reviews	Poor	Fair	Good	Very Good	Excellent
	o Offer coaching programs specifically for women	Poor	Fair	Good	Very Good	Excellent
	o Seek gender quotes in hiring, retaining, promoting, or developing women	Poor	Fair	Good	Very Good	Excellent
	o Systematic requirement that at least one female candidate be in each promotion pool	Poor	Fair	Good	Very Good	Excellent
	o Other (please specify)					
14.	How would you rate the efforts, if any, that your institution has done to reduce social and professional isolation?					
	o Programs to encourage female networking and role models	Poor	Fair	Good	Very Good	Excellent
	o Communication inclusion	Poor	Fair	Good	Very Good	Excellent
	o Offer mentorship programs	Poor	Fair	Good	Very Good	Excellent
	o Other (please specify)					
15.	How would you rate the efforts, if any, that your institution has done to provide accommodations for women and their families?					
	o Offer flexible working arrangements	Poor	Fair	Good	Very Good	Excellent
	o Offer support programs and facilities to help reconcile work and family life	Poor	Fair	Good	Very Good	Excellent

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		Poor	Fair	Good	Very Good	Excellent
	o Performance evaluation systems that neutralize the impact of parental leaves or flexible work	Poor	Fair	Good	Very Good	Excellent
	o Programs to smooth transitions before, during and after parental leaves	Poor	Fair	Good	Very Good	Excellent
	o Other (please specify)					
16.	How would you rate the following barriers, if any, preventing women from advancing in their career?					
	o Lack of a mentor	Poor	Fair	Good	Very Good	Excellent
	o Absence of women role models o Women not being in the pipeline long enough	Poor	Fair	Good	Very Good	Excellent
	o Lack of significant experience	Poor	Fair	Good	Very Good	Excellent
	o Exclusion from informal communication networks	Poor	Fair	Good	Very Good	Excellent
	o Requirement of scholarly activity	Poor	Fair	Good	Very Good	Excellent
	o Lack of pro-family policies or support services (e.g., childcare, leave policies)	Poor	Fair	Good	Very Good	Excellent
	o Other (please specify)					
RQ- 3	Leadership Maintenance (Section 4: Questions 17-19)					
17.	Please rate the current state of your institution's talent pool for women leaders in academic orthopaedic medicine?	Poor	Fair	Good	Very Good	Excellent
18.	How effective is your institution at retaining women once they reach leadership levels?	Poor	Fair	Good	Very Good	Excellent
19.	How do leaders in your organization perform on the following personal leadership competencies?					
	o Communicating effectively	Poor	Fair	Good	Very Good	Excellent

			Poor	Fair	Good	Very Good	Excellent
		o Creating a culture of accountability and performance	Poor	Fair	Good	Very Good	Excellent
		o Being adaptive	Poor	Fair	Good	Very Good	Excellent
		o Developing others	Poor	Fair	Good	Very Good	Excellent
		o Leveraging diversity	Poor	Fair	Good	Very Good	Excellent
RQ-4	**Overall Satisfaction (Section 5: Question 20)**						
20.	How satisfied are you with the following at your institution?						
		o Continuing education and training opportunities	Dissatisfied	Somewhat Satisfied	Neutral	Very Satisfied	N/A
		o The amount of vacation, sick, and personal days that I receive	Dissatisfied	Somewhat Satisfied	Neutral	Very Satisfied	N/A
		o Opportunities for promotions, raises, and bonuses	Dissatisfied	Somewhat Satisfied	Neutral	Very Satisfied	N/A
		o Work-life balance	Dissatisfied	Somewhat Satisfied	Neutral	Very Satisfied	N/A
21.	Do you have any comments, questions, or concerns?						

Appendix F: Open-Ended Survey Responses

#	Responses	Date
1	I am in a community, primarily rural hospital. We have only 1 female ortho in our group. There is one at another facility that works part time and another will be joining our group next month--working full time. Our current chief of staff is female, I will be the chief for the next 2 yrs, and there was a female 4 yrs ago. We have many women in the medical specialties, OB/Gyn, 1 female urologist. I don't know of specific leadership training for the women, but leadership training is available.	8/1/2016 5:57 PM
2	I think the biggest problem is that there haven't been female attendings at my institution long enough to figure out a way to handle things like maternity leave, especially for people in leadership positions.	7/28/2016 3:11 PM
3	I have been dealing with gender bias for my entire surgical career. I expect it will continue if I wish to continue in surgery.	7/28/2016 12:34 PM
4	Have not been here long enough to evaluate satisfaction.	7/28/2016 11:13 AM
5	i am one of multiple female faculty members. truthfully, there is more opportunity for leadership both locally and in specialty organizations than i have time for. our chairman has been very proactive in promoting female faculty into leadership positions- has supported several of us for the AAOS Leadership fellow program, etc...	7/28/2016 11:10 AM
6	This survey has inherent bias implying there needs to be special programs for women. The emphasis should be on finding and retaining the best orthopedic surgeons for patient care not just to fulfill some quota.	7/28/2016 10:26 AM
7	None	7/27/2016 9:53 PM
8	I am unsure of the answer to these questions as I am between fellowship and attending	7/27/2016 8:22 PM
9	The department has made no efforts to promote work/ life balance or support difficulties of women faculty in male dominated training programs (with respect). You can't just assign a mentor and when your chairman says " women belong in the kitchen barefoot and pregnant" it is hard to find a role model. If you don't fit the " motherly" role with the residents you are considered a B.....! Frustrating	7/27/2016 5:03 PM
10	There is a significant compensation gap between men and women in orthopedics, at my institution and elsewhere, and I think (though I can't prove it) that that extends to a "discounting" of our academic/leadership achievements as well. In other words, I think I get less credit for my academic accomplishments than a man would get for the same things.	7/27/2016 4:33 PM
11	I am in private academics so there is no salary/leave/bonus etc.	7/1/2016 7:56 AM
12	luckily I am at a small, single specialty hospital that specializes only in pediatric orthopaedics. we have 3 pediatric orthopaedists who are women on staff despite having no formal programs for women - perhaps because women are not treated differently at our institution and feel supported??	6/29/2016 1:19 PM
13	I am 65 years old. There was no blank choice for that at the beginning of the survey.	6/29/2016 12:19 PM
14	I think my department chair is working to increase diversity within the department, and to see women progress in leadership roles, promotions, etc. I am less convinced that the institution as a whole is overwhelmingly interested.	6/28/2016 11:07 PM
15	We have few women faculty but they have significant support	6/28/2016 8:00 PM
16	the place i work has a solid tradition of general surgery female attendings in the higher ranks. this helps the culture overall so that there is less of an emphasis on female mentorship.	6/28/2016 5:36 PM
17	Being at a state institution limits the opportunities for raises and bonuses according to state law.	6/28/2016 3:32 PM
18	At my institution we have 24 ORs (two separate floors worth. The hospital was build in 1998 and they did not think it was necessary to attach the female physicians locker room to the surgical lounge. In order to talk to one of my attendings when I am doing ER or floor work I have to either ditch my coat to walk through the OR or run through the men's locker room. Either way highly disruptive.	6/28/2016 2:03 PM
19	Some programs need help to make women feel they are viable candidates. Other programs have made it a norm to consider women just as any candidate. We must be careful not to make women a special interest group; this view	6/28/2016 12:18 PM

ABOUT THE AUTHOR

Ann Joyce is a Learning Facilitator at the University of South Florida in the Department of Orthopaedic Surgery. She became interested in higher education when she started working at Moffitt Cancer Center in the Continuing Education Department.

While pursuing her Master's Degree in Training and Development, she was recruited by Dr. G. Douglas Letson, Director of Graduate Medical Education, to help develop an orthopaedic residency program in the Tampa Bay Area. Shortly after submitting the proposal as part of her Master's Degree Comprehensive Project, the program was accredited and a department was formed, headed by both Dr. Letson, Director, and herself, Program Manager.

When she discovered the program could be improved, she decided to pursue her doctoral degree in Curriculum and Instruction with an emphasis in Higher Education Administration. Because of the relevance of her degrees and her background in adult education and orthopaedics, she decided to focus her research on the perspectives of women in orthopaedic surgery