# ELEMENTS RELATED TO ATTRITION OF WOMEN FACULTY AT THE UNIVERSITY OF PITTSBURGH, SCHOOL OF MEDICINE: A CASE STUDY

by

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Recent studies have shown that the number of women faculty in academic medicine is much lesser than the number of women that are graduating from medical schools. Many academic institutes face the challenge of retaining talented faculty and this attrition from academic medicine prevents career advancement of women faculty. This case study attempts to identify some of the reasons for dissatisfaction that may be related to the attrition of women medical faculty at the University of Pittsburgh, School of Medicine. Data was collected using a job satisfaction survey, which consisted of various constructs that are part of a faculty's job and proxy measures to gather the faculty's intent to leave their current position at the University of Pittsburgh or academic medicine in general. The survey results showed that although women faculty were satisfied with their job at the University of Pittsburgh, there are some important factors that influenced their decision of potentially dropping out. The main reasons cited by the women faculty were related to funding pressures, work-life balance, mentoring of junior faculty and the amount of time spent on clinical responsibilities. The analysis of proxy measures showed that if women faculty decided to leave University of Pittsburgh, it would most probably be due to better opportunity elsewhere followed by pressure to get funding. The results of this study aim to provide the School of Medicine at the University of Pittsburgh with information related to

attrition of its women faculty and provide suggestions for implications for policy to retain their women faculty.

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**ACKNOWLEDGEMENTS**

*"We cannot solve our problems with the same thinking we used when we created them."* - Albert Einstein.

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The journey towards completing this doctoral degree was full of joys, surprises and trying times. The greatest of joys that was bestowed on me, as I started this endeavor, was the birth of my sons, Rohan and Yash. Watching them grow gave me the strength to trudge along and reach the destination. The unconditional support provided by my husband, Manoj, who stood by me through every phase and chapter of my life; giving me encouragement and making sure I reached my journey's end. He has helped me through the whole spectrum, from waiting to pick me up at night, after class, in the freezing weather, to putting the kids to bed; calming me when I had meltdowns to helping me with statistical insights and editing. None of this would have been possible without his support; he is truly my best friend and eternal love.

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# 1.0 INTRODUCTION

Although academic institutions are considered democratic in spirit, medical schools, since at least the mid-nineteenth century, have traditionally reflected a predominantly masculine culture. Currently the medical profession is still in a transitional period, as a growing number of women are entering this profession. Although there is a continuing effort to increase the representation of women faculty in medical schools, the diversity of the medical faculty has not kept pace with the diversity of medical school students or of society in general (Jones & Korn, 1997; Magrane & Jolly, 2005).

It is important for medical schools to attract and retain the best women faculty, but it is difficult to do so, on account of various factors that pressurize both, the individual as well as the institution. Long years of training with significant educational debt, social pressures of personal and family responsibilities, and the stress of scholarship, all have a cumulative effect of forcing women to opt out of academia. For research faculty the continual stress to secure funding and publishing in high quality journals are added barriers to academic success. Women are promoted and granted tenure more slowly, and are paid less than their male counterparts (Bhattacharjee, 2004; Tesch & Nattinger, 1997). They experience gender discrimination and sometimes unconscious bias which also affect their careers (Barnett, Carr, & Boisnier, 1998; Risberg, Johansson, & Hamberg, 2009; Tesch, Wood, Helwig, & Nattinger, 1995). Lack of role models is

another hurdle that sets back career advancement for women (De Angelis, 2000; Levinson, Kaufman, Clark, & Tolle, 1991; Wolfe, 2005). Although mentoring is mandatory in medical schools, many of the junior women faculty experience insufficient or inadequate mentoring. All these factors lead to women having higher rates of attrition from medical schools thereby leading to rampant gender inequity.

Recruitment, retention, and advancement of women faculty, and administrators, may be the most direct means to gender equity. It is expensive for institutions to heavily invest in young faculty and to replace those who leave prematurely. Schools and departments with below average proportions of women faculty, especially at senior ranks, need to investigate their appointment and promotion practices and personal policies (Bickel, 2001 p. 266). Nurturing promising young women faculty through organized faculty development and mentoring programs may have a significant effect on the future of the institutions (Ely & Meyerson, 2000). "Where gender-related hindrances are identified forward-looking improvements need to be implemented"(Bickel, 2001 p.268). The purpose of this study is to investigate reasons for attrition of women faculty in a leading university school of medicine.

## 1.1 BACKGROUND

In the years immediately following the passage of the 1964 Civil Rights legislation banning gender discrimination, there was a lot of attention focusing on gender equity in the workplace. In the field of medicine gender equity has been largely achieved at the entry level, but the existence of gender bias continues to present significant obstacles in the career paths for

women (Shrier, 2003). The medical school systems mirror most organizations in societies, which are traditionally structured to exclude women from higher-level jobs. Also male dominance in society leads to manifestations of visible and invisible forms of discrimination which limit women to subordinate positions, both in public, and in private economies. Women perceive themselves as having fewer opportunities and thus react by limiting their aspirations and behaviors.

Unlike Europe, the US has not established a governmental infrastructure that is family-friendly and aims at establishing a work-family balance (Bailyn, 1993). This leads to emotional stress affecting both the personal and workplace lives of women medical faculty. 75% of women physicians often work a "double shift" between work and home, averaging twenty hours per week more than men on childcare and household responsibilities (Hochschild, 2001). Much scholarly literature has documented the realities of women's careers in medicine, and attempted to identify the lacunae in their career advancement, leadership responsibility and compensation as compared to their male counterparts (Ash, Carr, Goldstein, & Friedman, 2004; Bickel, 1991; Bickel, 1988; Carnes, Morrissey, & Geller, 2008; Nonnemaker, 2000; Tesch & Nattinger, 1997). For more than twenty years, phrases and concepts like "glass ceiling", "gender gap," "chilly climate", "sticky floor," have been liberally sprinkled over the pages of research studies, and have been frequently used in conversations, about women in medical schools. These concepts are a reflection of the different experiences women and men acquire as they negotiate their careers in academic medicine. These concepts are still widely used and discussed, suggesting that we have not yet overcome the gender-based problems that need to be addressed in order to create an environment that is supportive of women's recruitment, retention, and advancement in academic medicine. These concepts also highlight the isolation, and the barriers that women in medicine

experience. Statistics of academic medicine show that not only are women faculty not advancing in their careers at the same rate as their male counterparts, but they are also prematurely leaving medical schools in a greater number than their male counterparts. The report by the National Academies, *Beyond Biases and Barriers; Fulfilling the Potential of Women in Academic Science and Engineering (2007),* notes that "the problem is not old-style, overt sex discrimination, but rather unrecognized features of the organizational culture that affect men and women differently"(p. 199). It is important to identify those salient cultural factors that affect women's careers in medicine and do away with the gender stereotypes that still, overtly, as well as subtly inhabit the medical schools.

## 1.2 STATEMENT OF THE PROBLEM

It is helpful to refer to the often-used construct of a pipeline when we consider the situation of women in academic medicine. Women in residency programs in medicine grew from 38% in 2001 to 47% in 2011. It was reported by the Women Physicians Congress of the American Medical Association that, in 2004, women physicians were more than 235,000, as contrasted to a mere 25,000 in 1970 (Groves, 2008). By 2010, 30% of the practicing physicians were women, an increase from 7.6% in 1970, and 25.2 % in 2002 (Association of American Medical Colleges, 2013). Thus there is no shortage of qualified female candidates with credentials to be recruited into medical academe. In 2011 women represented 44 percent of the total new hires, up from 37 percent in 2009 (Jolliff, Leadley, Coakley, & Sloane, 2012). As of May 31, 2012, the women faculty was reported to be at 37 percent (Jolliff et al., 2012). This

evidence proves that women faculty have been joining academic medicine at higher rates than in the past.

However it is here, itself that obstacles in the pipeline start arising. Women tend to stay in junior positions for longer periods than their male counterparts (Bartuska, 1988; Buckley, Sanders, Shih, Kallar, & Hampton, 2000; Burrow et al., 1996; Carr, Friedman, Moskowitz, & Kazis, 1993; Cropsey et al., 2008; Nonnemaker, 2000; Yedidia & Bickel, 2001). First-time women assistant professors face several challenges including inadequate mentoring and work-life balance issues. Women faculty had a longer time-to-promotion and were less likely to be promoted than the men faculty (Liu & Alexander, 2010). Men were twice as likely to hold tenure positions than women (Bunton & Corrice, 2010). For example, in 2011, 21 percent of men were tenured as compared to 10 percent for women (Jolliff et al., 2012). There has also not been a proportionate increase in the number of senior women faculty and in the number of women in leadership positions. This indicates that women experience challenges, no matter at what stage or evaluation point in their academic career (Carr et al., 1998; Carr, Szalacha, Barnett, Caswell, & Inui, 2003; Valian, 1999).

The report published by Jolliff et al., 2012 documented that, overall, the percentage of women as new hires has gone up. The report also showed that the national average for annual number of women-faculty departures as a percent of total women faculty has been trending downward, being 7 percent in 2009 down from 9 percent in 2006. The departure rate has remained steady at 7 percent in 2011 (Jolliff et al., 2012) (Fig. 1). Losing women faculty in academic medicine is a serious concern (Alexander & Lang, 2008). The cost of faculty attrition has been estimated to account for five percent of the annual academic medical center budget

(Cropsey et al., 2008). Given the rising costs of faculty turnover, it seems more profitable for an institution to invest in faculty retention strategies as against more costly recruitment efforts.

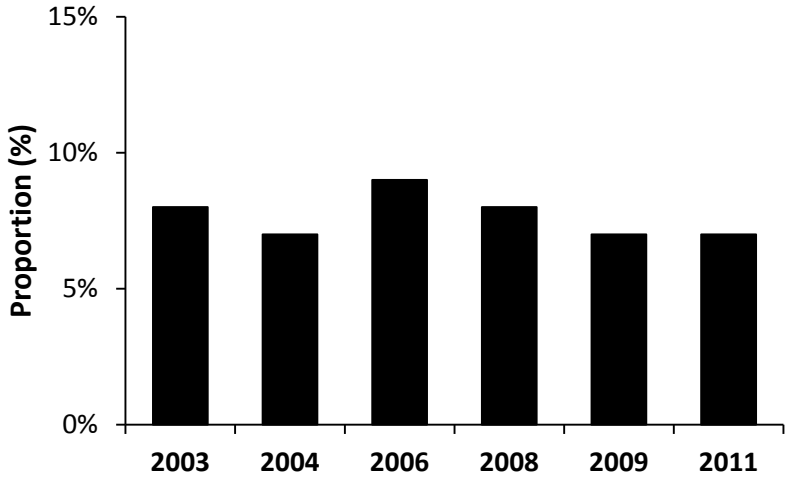


*Figure 1.* Annual women faculty attrition in the United States represented as fraction of total women faculty departures at all levels.

## 1.3 PURPOSE OF THE STUDY

At the outset of this study, it was distressing to discover that although more women than men were being enrolled in, and were graduating from medical schools, there was an imbalance in their representation in medical school faculty, especially at the higher ranks. The obstacles, women faculty face in medical schools, are not insurmountable and with adequate institutional interventions it is possible to prevent the attrition of women from the academic pipeline. However, it is important to learn what factors discourage women faculty to remain in academic medicine and prematurely leave it. Specifically, this quantitative case study has attempted to document the experiences of a specific demographic profile (women medical faculty), time

(contract, pre-tenure and tenure-track levels), and ranks (instructors, assistant professors, associate professors and full-professors); at one particular school (University of Pittsburgh) that was hitherto unexplored.

## 1.4 RESEARCH QUESTION

Like any other research one institution, the University of Pittsburgh has a competitive School of Medicine, and women faculty may have the same experiences as their counterparts in comparable institutions. Overall the national average for women faculty attrition has been on the downswing, similar data was observed from the University of Pittsburgh showing that the percentage of women faculty leaving University of Pittsburgh, School of Medicine increased from six percent in 2007 to nine percent in 2009, but then decreased to four percent in 2011 (Jolliff et al., 2012) (Fig. 2). The term attrition, for this study is being used as the intent to leave the current faculty position at the University of Pittsburgh, and the decision to depart from the field as permanent or long-term career path change (Dee, 2004). Though, for now, a downward trend is seen in the year 2011, and no new data has been gathered since then. But it is critical to identify the reasons for women faculty to leave the University of Pittsburgh, School of Medicine. Consequently, the main research question for this study is: What important factors are associated with the likelihood of women faculty attrition from academic medicine/University of Pittsburgh?

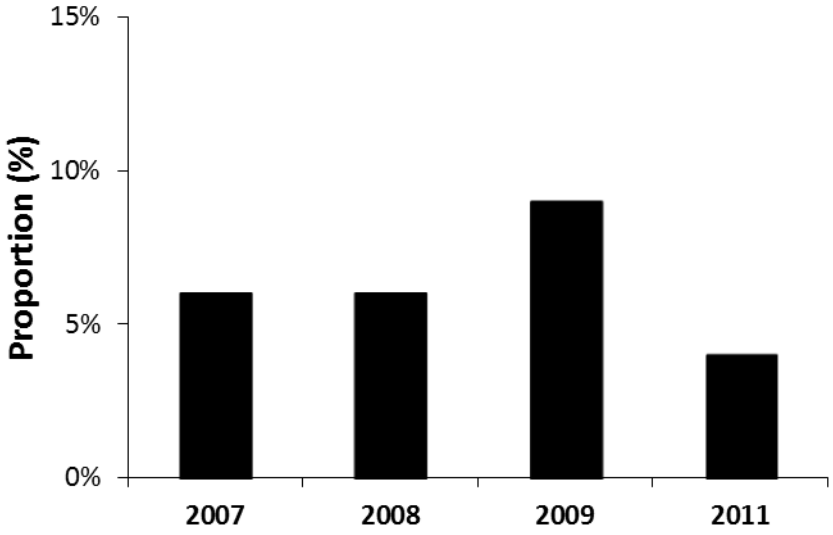


*Figure 2.* Women faculty attrition at the University of Pittsburgh (% of total women faculty).

## 1.5 SIGNIFICANCE OF THE STUDY

It has been projected that enrollment in medical schools is expected to increase by approximately 30% by 2018 (Schulman & Salsberg, 2009; Yamagata, Grover, & Salsberg, 2006). An understanding of how careers of women are affected by various barriers in their advancement and promotion can not only enhance an institution's ability to attract, hire, and retain qualified women faculty, but also be useful to women faculty navigating their careers in academic medicine. With an increase in the number of medical schools and demand for more faculty members, it is of utmost importance to circumvent the barriers that exist for women and avoid any shortage of women-faculty in medical schools.

There are both short-term as well as long-term gains for medical schools that fully utilize women's intellectual inputs in academic medicine. For example, women leaders can positively influence the effective marketing of a women's health initiative. Besides, many patients seek women surgeons and subspecialists. Students, too, require the presence of women role models at medical schools (Bickel, 2001). Since the number of women among medical students is increasing, only those medical schools able to recruit and retain women in all departments will have the best faculty and administrators (Stobo, Fried, & Stokes, 1993). Competent women can attract other competent, bright and able women. With the increase of diversity in the work-place, stability and resilience would consequently set in, benefits of which have already been recognized in the corporate world. There is also evidence that teams which have diversity, prove to be more effective than ones with homogeneity (Capra, 1997; Lippman, 2000; Sessa & Taylor, 2000). For example, women leaders can positively influence the effective marketing of a women's health initiative. From the institutional viewpoint, the results of this study has provided useful information to medical institutions for recruiting and retaining qualified women faculty needed for the increasingly growing medical centers. Findings of this study can aid medical schools to fine-tune their faculty hiring and retention practices, which is crucial to institutional efficiency (Mignonac & Challiol, 2005).

# 2.0 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

## Academic Careers of Women Medical Faculty

The presence of women in medicine has undergone significant changes in the last 150 years. Medicine in the U.S. has traditionally been a male-dominated field. However, the last few decades of the twentieth century saw radical changes in the gender ratios, especially where student enrollments and graduation rates are concerned. While the role of women faculty in medicine has developed significantly with respect to their functions as a physician, researcher and academician, the troubling aspect has been the high attrition (drop-out) rates of women medical faculty. Since faculty attrition costs institutions in terms of money as well as effort, it is in the institution's best interest to address the reasons for attrition and provide support systems to retain the potential women faculty dropouts. Retention of women faculty is of utmost importance and is vital to the future of academic medicine.

This chapter focuses on the three specific aspects that concern women medical faculty namely:

1) What does the literature say about the history of female physicians in academic medicine?
2) What are the major inhibitors that prevent women faculty from being successful in academic medicine?

3) What actions have line administrators taken to broaden the appointment, promotion, retention and leadership opportunities for women faculty?

## 2.1 WOMEN AS MEDICAL STUDENTS

Since ancient history, women have been recorded as being healers. Their role in society was varied. While performing their familial duties, they were also the unlicensed doctors, nurses, counselors, pharmacists, and midwives. Since women were barred from entering institutions of learning and gaining knowledge from books and lectures, they passed on their experiences by sharing with other women and from mother to daughter (Ehrenreich & English, 1973).

After years of being prohibited from academia, in 1847, Elizabeth Blackwell was the first woman admitted to a medical school, the University of Pennsylvania; 82 years after it was established in 1765. In the late 1800s, only 10% of practicing physicians were women. In 1903, Florence Sable becomes the first female medical faculty, at the Johns Hopkins School of Medicine ("American Medical Association. Women Physicians Congress.," n.d.). In the late 19$^{th}$ century and early 20$^{th}$ century there were multiple options for women to become doctors. In 1905 the percentage of women graduating for medical schools was about four percent, and the numbers gradually grew to around 9,000 by 1910. However, in the first half of the twentieth century the male-dominated educational set up was so unreceptive to women that coeducational schools had very limited spaces for female students and most of the all-female schools were closing down due to lack of support and bad infrastructure (McLean, 2010). A case in point was the Flexner report in 1910 that put a brake upon the growth of women in medicine. Alexander

Flexner submitted a report to the Carnegie Foundation for the Advancement of Teaching titled "Medical Education in the United States and Canada" that expressed concern for the quality of physicians graduating from private institutions and commercially motivated establishments. These institutions were usually not associated with reputed colleges and were deficient in quality of laboratories and instruction; hence Flexner recommended that such inferior institutions, which included the all-female medical schools, be closed down (McLean, 2010). Flexner's suggestions were taken very seriously and most of the all-female institutes and other "substandard institutions were shut down (Duffy, 1993). By 1920 the number of practicing women physicians remained at or below five percent from 1920s to 1970s (Wolfe, 2005).

There may have been a few "pseudo-peaks" with the number of women medical graduates increasing to 12% by 1949 and only to fall again to seven percent in 1975 ("American Medical Association. Women Physicians Congress.," n.d.). The reason they would be termed pseudo-peaks because a closer look reveals that the military draft laws enlisting men during World War II may have been a key factor contributing to the change in demographics during this timeframe. This resulted in a relative increase in the enrollment and graduation rates of female students, especially, since the military draft laws eliminated student deferment (Bound & Turner, 2002; IU Digital Library Program, 2013).

The 1970s proved to be the decade of substantial changes for women medical students. In 1971 the Title VII of Public Law 92 – 147, brought about a change in the admission of women, since it prohibited discrimination in educational opportunities. There was also an amendment to the Health Manpower Act during the same year. Title IX of the Higher Education Act amendments of 1972 (20 U.S.C. 1681[1972]) further aided "a precipitous rise, which could soon be charted graphically as a bold line going up at a 45 degree angle" (Bluestone, 1978 p. 760). It

established the Federal Government's commitment to equal access to education, regardless of gender. Since its enactment, Title IX has been publicly recognized as providing women entry into areas previously dominated by men. Among other fields, this led to an increase in the number of women entering into professional specialties. By 1975, female enrollment in medical colleges passed the 20 percent mark, indicating that, within 10-15 years, half the nation's graduating physicians would be female (Carlova, 1975) and by the time of Bluestone's study in 1978, female enrollment in medical colleges was around 30%. The steady growth of female medical students has been noticeable, only, as late as the mid-1970s when 27 new two-year and four-year medical schools were opened (Leadley & Sloane, 2011). Between late 70s and early 2000s the percentage of female medical students increased from 38.9% to 46.4%. The last school in the U.S.A. to allow women was Jefferson Medical College in Philadelphia, PA, in 1960 when it opened its doors for women to enroll. In the 1960s only six percent of incoming freshmen medical students were women (Bluestone, 1978). Interestingly, in 2003, Jefferson's freshman class was 51.5% women ("American Medical Association. Women Physicians Congress.," n.d.).

Throughout the 1980s and 1990s, there was a steady increase in the number of women applicants for medical school. The number of women applying to, and being accepted for medical school, was unprecedented. In 2001, 44% of medical students enrolled as freshmen were women (Recupero, Heru, Price, & Alves, 2004). For the first time, a milestone was achieved when, in 2003, over 50% of the applicants for medical school and 50% of the enrollees, were women. Since 2005, however, the number of female medical students has been gradually decreasing, as fewer women are applying to medical schools. In 2009, women represented 48% of the total applicants and enrollments to medical school (Leadley & Sloane, 2011). Jolliff et al. (2012) reported that the percentage of women applicants to medical schools in 2010 was 47%. In

2011 at all Liaison Committee on Medical Education (LCME)-accredited U.S. medical schools, 47% women applicants were accepted, 47% of women were enrolled and equal percentage were freshmen.

The percentage of women in residency programs grew from 38% in 2001 to 47% in 2011. The Women Physicians Congress of the American Medical Association reported that women physicians in 2004 were more than 235,000, while there were merely 25,000 in 1970 (Groves, 2008). Women made up more than 25% of physicians and 40% of all residents and fellows. By 2010, 30% of the practicing physicians were women, an increase from 7.6% in 1970, and 25.2% in 2002 (Association of American Medical Colleges, 2013)

## 2.2 WOMEN AS FACULTY

Although the number of women medical students has been steadily increasing since the mid-1970s with the current proportion of female medical students hovering around 50%, gender parity in faculty does not exist at medical schools (Levine, Lin, Kern, Wright, & Carrese, 2011). During the 1980s, women entered academic medicine at a higher-than-expected rate (Nonnemaker, 2000) and have been entering medical schools at higher rates than are reflected in faculty rank (Pell, 1996). In 2001, 45% of all medical students were women (Cropsey et al., 2008). In contrast, from 1995 to 2001, full-time women faculty in medical schools increased marginally from 25% to 29%. There has been a steady increase in the subsequent years; by 2005 the percentages went up to between 28% and 32% and in 2010, 35% of medical school faculty were women (Villablanca, Beckett, Nettiksimmons, & Howell, 2011, Borges, Navarro, &

Grover, 2012; Leadley & Sloane, 2011). As of May 31, 2012, the percent of women faculty was reported to be at 37% (Jolliff et al., 2012).

With this discrepancy in mind, one obvious question that arises is whether academic medicine is attracting a disproportionately low percentage of female faculty as compared to the total pool of potential faculty applicants? The answer to this question lies in the number of women joining the academic ranks. Regarding new hires, in 2011 women represented 44% of the total new hires, as compared to 41% of the total new hires in 2009 (Jolliff et al., 2012) (Fig. 3). This indicates that women faculty have been joining academic medicine. Long-term trends have demonstrated that although women prefer to pursue academic careers, they leave academia at higher rates than men (Jolliff et al., 2012) Along with the fact that while the number of women joining as new faculty has increased, there has not been a proportionate increase in the number of senior women faculty in academic medicine. This indicates that the declining numbers of women in academic medicine is not a "hiring" issue, but more likely a "retention" issue.

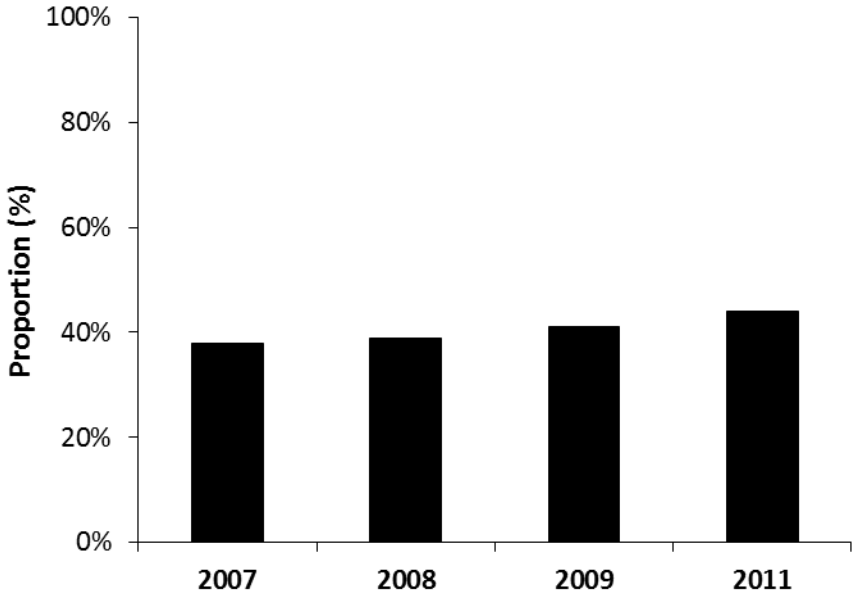


*Figure 3.* Rate of women faculty appointment in United States medical schools represented as percentage of total new appointments, both male and female.

However, several studies have shown the women are concentrated in the lower ranks and tend to stay in junior positions for longer periods than their male counterparts. In a cohort of physicians who first became medical school faculty in 1976, 12% of the men had become professors by 1987, but only three percent of the women had attained this rank (Bickel, 1988; Osborn, Ernster, & Martin, 1992). Among all women faculty, almost 70% were at the instructor and assistant professor level (Brown, Swinyard, & Ogle, 2003). A study by Bartuska, 1988 reported that 67% of the women faculty were in the entry-level ranks of assistant professor, research instructor, or clinical instructor. As the ranks move up the ladder, only 18.9% of all women are at the rank of associate professor while 11% of all women are at the rank of full professor. In comparison only 47% of male faculty are at junior ranks (Magrane & Jolly, 2005).

Brown et al. (2003) report that the data from the AAMC shows that women remain underrepresented in the senior ranks of academic medicine or in leadership positions (Nonnemaker, 2000, McGuire, Bergen, & Polan, 2004) and this discrepancy has lingered for decades. The percentage of female medical faculty at the rank of full professor has increased only a little between the 1970s and the 1990s, from seven percent in 1978 to nine percent in 1990 (Hamel, Ingelfinger, Phimister, & Soloman, 2006; Tesch et al., 1995; Villablanca et al., 2011). In 1985, women constituted only 10% of all individuals at the rank of full professor (men and women included). Even after two decades, in 2003, that percentage remained essentially unchanged at 11% (Brown et al., 2003). Brown et al. (2003) suggested that it could take well over 25 years for women to arrive at the 50% level (Paik, 2000). In 2005 only 15% of full professors and 11% of department chairs were women (Hamel et al., 2006). In 2010 only 13% of women faculty were full professors (down from 15%), the rest were at instructor, assistant professors and other ranks, compared to 30% of men faculty who were full professors.

There are studies that confirm the effectiveness of women in leadership roles (Eagly, Johannesen-Schmidt, & Van Engen, 2003; Rosser, 2003). In a statistics and benchmarking study on women in U.S. academic medicine, Leadley and Sloane (2011) reported that percentage of full professors increased from 11% in 1999, 16% in 2004 to 19% in 2009, although there has been an increase in the number of women in ranks of associate professors and full professors from 2007 to 2010, this increase constituted less than one percentage point per year, much lower as compared to men. In 2011 women represented 37% of the promotions to associate professor, and 31% of the promotions to full professor (Jolliff et al., 2012).

Over the period of ten years – 1999-2009 –division/section chief, department chair, and dean appointments had the largest increases in the proportion of women as compared to previous

decades (Leadley & Sloane, 2011). In spite of the increases, as of 2009, the number of women division/section chiefs, exceeded that of men at only two medical schools – Morehouse School of Medicine and Baylor College of Medicine. The average number of permanent women associate chairs and vice chairs per medical school in 2004 was three, up from two in 1999. In 2009, the number of permanent women department chair appointments was the same as in 2008. In 2008, 13% of the 131 deans were women, while in 2009, 12% of the 144 deans at accredited medical schools in the United States and Canada were women (Dannels et al., 2008, Leadley & Sloane, 2011). As of December 31, 2011, of 119 U.S. medical schools with full accreditation from the LCME, 12% of these had women deans, and 17% of the 12 medical schools with provisional accreditation had women deans (Jolliff et al., 2012).

Obtaining tenure is another essential milestone for a tenure-track faculty. Previous studies have noted that there is a fairly consistent trend that men are twice as likely to hold tenure positions as women. In 2011 women represented 32 percent of the 949 new tenures. (Bunton & Corrice, 2010). In 2006, 23 percent of men were tenured as compared to 11 percent for women. Similarly in 2011, 21 percent of men were tenured as compared to 10 percent for women (Jolliff et al., 2012).

According to Dr. Renucci, underrepresentation of women in executive positions in medical schools can be partly explained by an age disparity. Sixty percent of women physicians are less than 45 years of age. As a result the argument made is that many women do not have the experience and requisites for high-level leadership posts (Groves, 2008); and that women do not compete for such positions on account of personal and family responsibilities. This reasoning may not be totally accurate because even when women have been in certain specialties for the over three decades they are still not in positions of department chairs (Carnes et al., 2008).

Women may choose to avoid leadership roles for private reasons, but even when they desire such positions, they often face discrimination and are prevented from being promoted to leadership positions (Carnes et al., 2008; Wright et al., 2003).

Although Bickel et al. (2002) reported that the number of women department chairs and deans had grown higher over the years, they state, that:

> …the growth has not substantially reduced gender differences in advancement or sufficiently strengthened the pool of women candidates for administrative positions. Thus the progress achieved over the last 25 years is incomplete and inadequate. Few schools, hospitals, or professional societies have a 'critical mass' of women leaders. And the pool from which to recruit women academic leaders remains shallow. (p. 1049)

The term 'glass ceiling' has been widely used in studies on the advancement of women faculty in academic medical centers (Carnes et al., 2008; Dickstein, 1996; Nickerson, Bennett, Estes, & Shea, 1990; Tesch & Nattinger, 1997). The metaphoric ceiling is an apt description of the seemingly insurmountable, and largely invisible, barriers to the advancement of women to elite leadership positions in medical schools. In a 1995 editorial Carnes (2008) noted that:

> . . . as I stood just beneath the glass ceiling and looked through it, I could see no appealing role models in my institution because of the gendered differences in behavioral norms and social roles both inside and outside academic medicine (Carnes et al., 2008, p.1453).

This persistent paucity of women leaders in academic medicine is of national concern, because of the untapped potential of the skills that women contribute to the medical profession. The glacially slow advancement of women to leadership positions in academic medicine is the

result of all the barriers women experience at every step and evaluation point in their academic careers (Carr et al., 1998; Carr, Szalacha, Barnett, Caswell, & Inui, 2003; Valian, 1999).

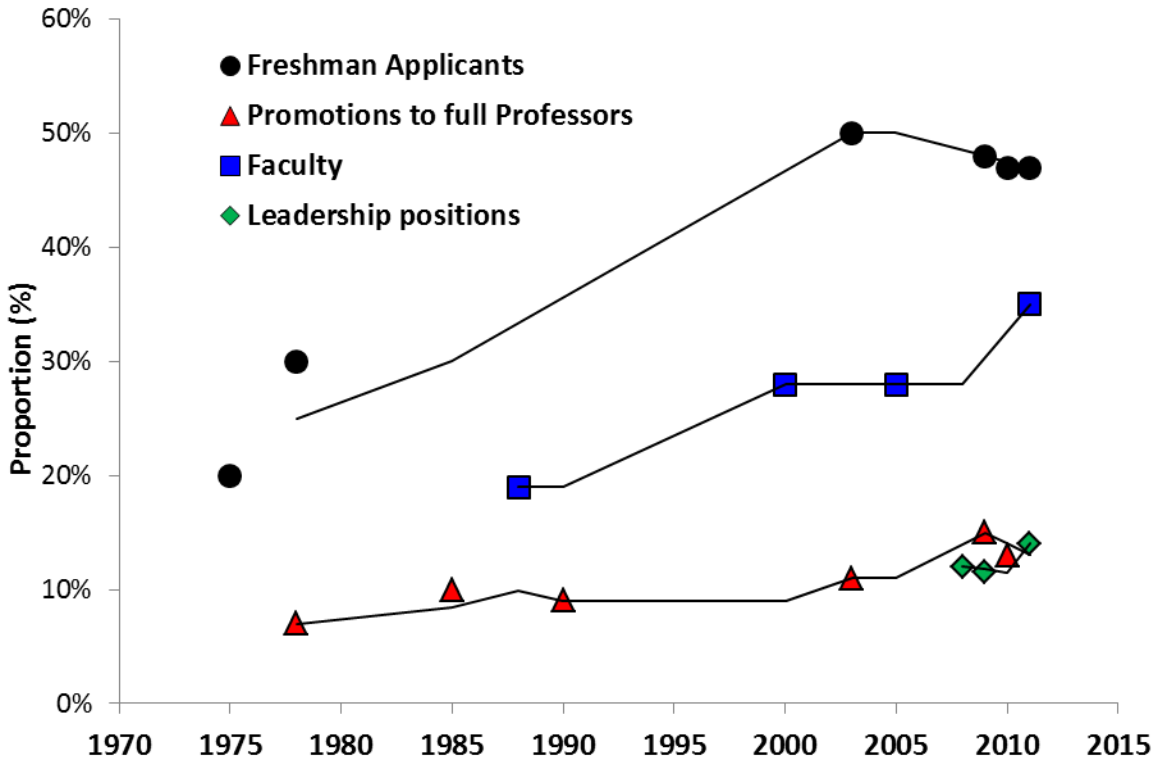


*Figure 4.* Historical trend for four different parameters reflecting the progress of women in academic medicine. The number of freshman applicants is different from number of freshman enrollment in medical school. Faculty positions include all types of faculty (post doc, instructors, assistant, associate and full professors). Leadership positions include department chairs and deans.

## 2.3 INHIBITORS OF SUCCESS FOR WOMEN FACULTY IN ACADEMIC MEDICINE

Medical schools have steadily seen an increase in graduating women candidates. However, the percentage increase of women faculty joining and staying in academic medicine has not followed a similar trend. As outlined in the previous sections, the reason for gender disparity skewed against female faculty can be attributed to the attrition of female medical faculty rather than lower incoming new faculty.

Prior studies have demonstrated inequality between female and male medical faculty in terms of promotion rate, compensation, leadership positions, first author publications in top medical journals and receipt of funding that have resulted in dissatisfaction among the women faculty and influenced their intent-to-leave academia (Ash, Carr, Goldstein, & Friedman, 2004; Bickel et al., 2002; Jagsi et al., 2006; Jagsi, Butterton, Starr, & Tarbell, 2007; Nonnemaker, 2000). The number of disadvantages experienced by women during their career growth was also higher than what men would normally experience. “Discrimination related to gender continues to be a fact of life for all too many women physicians and students” (Burrow et al., 1996, p. 804). Nonnemaker (2000) reported that women were likelier than men to not enter into full-time faculty positions because of greener pastures available elsewhere. This study suggested that “women [were] finding more opportunities outside academic medicine, either because of an increased demand for women physicians or because of increased opportunities for employment that [was] conducive to their personal and professional goals” and cautioned that “As alternative career paths [became] more appealing to women, medical schools may have to work harder to attract and retain talented women” (p. 404). In interviews conducted by Levine, Lin, Kern,

Wright, & Carrese, (2011) over a 2 year period, the authors concluded that the respondents in the study found it difficult to establish a work – life balance in a biased and non-collaborative environment that was devoid of role models and combined with frustrations with research funding and poor mentorship. The authors advised that higher education administrators needed to explore aspects of academic career that women valued most in their efforts to retain women medical faculty.

There are a few main forces that affect the retention, promotion and development of female faculty and result in their attrition from academic medicine. These can be broadly classified as environmental factors and internal factors. Environmental factors are those that pose a threat that is beyond the capability of change on an individualistic level. These factors include gender bias, the glass ceiling phenomenon, salary inequity and mentoring. Internal factors, on the other hand, are the attitudinal differences, the way women think and analyze, and the work and life imbalance that results in low research productivity.

### 2.3.1 Environmental Factors - Gender Bias: Could it be because you are a Woman?

In the words of Ruiz & Verbrugge, (1997):"Like a polarized lens gender bias can arise from two views – one assuming equality where there are genuine differences and the other assuming differences where none may exist" (p. 106 – 109). The gender bias in academic medicine arises due to the assumption that sameness and/or equity exists between women and men, when, in fact, there are genuine differences between the two sexes with respect to biology and disease, as well as life conditions and experiences (Risberg et al., 2009). DeAngelis (2000)

believes that "equal opportunity for women will never be possible. I would settle for equity – that is freedom from bias or favoritism". On the other hand gender bias can also arise when differences are assumed when in reality there are none that exists between men and women,

> …when and if dichotomous stereotypes about women and men are understood as valid. This conceptual thinking can be useful for discussing and avoiding gender bias in clinical work, medical education, career opportunities and documents such as research programs and health care policies (Risberg et al., 2009).

Many studies have reported that women in academic medicine experience gender-based discrimination (Carr, Friedman, Moskowitz, & Kazis, 1993; Fried et al., 1996; Nora et al. 2002; Carr et al., 2003; Wright et al., 2003, Cropsey et al. 2008). This gender-based discrimination exists at all levels in the medical hierarchy beginning as early as students in medical school (Bickel, 2001; Johansson & Hamberg, 2007), to medical researchers and fellows (Reichenbach & Brown, 2004; Wenneras & Wold, 1997), to physicians (Kvaerner, Aasland, & Botten, 1999; Riska, 2001), and medical faculty. One may wonder in what way gender discrimination affects clinical faculty. In their study, Gjerberg & Kjolsrod (2001) found that women physicians faced more difficulties than men in garnering help from nurses.

Gender-based discrimination tends to severely hamper the promotion of female faculty in academic medicine (Conley, 1993; Eisenberg, 1989). This may appear unintentional since gender bias can very subtly influence decisions regarding promotion for women (Tesch et al., 1995). In a series of interviews with 34 chairs and 2 divisional chiefs of five Departments of Medicine, Yedidia and Bickel (2001) concluded that gender related prejudice had an unfavorable impact on recruitment, promotion, trainings for development, and routine obligation of academic work.

The constraints of traditional gender roles and manifestation of sexism in the medical environment is one of the main reasons for women leaving academic medicine. Gender bias is rooted in an unawareness of attitudes and merely providing the facts will not help rectify this problem. It is crucial that gender bias needs to be addressed in order to mitigate the discrepancy that exists in the proportion of female and male faculty in academic medicine.

### 2.3.2 Environmental Factors - The Glass-Ceiling Phenomenon

It is believed that the presence of more women in senior faculty and leadership roles in academic health centers can produce rapid changes in healthcare reform for women (Richman, Morahan, Cohen, & McDade, 2001). Despite increases in women medical school faculty over the previous two decades, the proportion of women in senior levels at U.S. medical schools has increased at "a glacially slow pace" (Richman et al., 2001). This results in a myriad of inequities leading to a lack of self-confidence among women faculty, lack of integrated women's health curricula and underrepresentation of women and their medical needs (Richman et al., 2001). To add to this, the salary inequities combined with gender insensitivity leads to a detrimental cumulative disadvantage that manifests in the form of fewer mentors and unconscious, but institutionalized, sexism (Magretta, 1997; Meyerson & Fletcher, 2000; Tack & Patitu, 1992). Attainment of senior faculty rank is conceived as inaccessible which is what exemplifies the definition of a "glass-ceiling phenomenon" (Tesch et al., 1995).

After examining national data, Buckley et al. (2000), found that the percentage of women medical school graduates increased in the last two decades of the 20$^{th}$ century – from 8% in 1970 to 42% in 1997 – as well as the number of women in faculty positions at academic medical

centers. In spite of this increase, the proportion of women at the level of professor during the same period of time remained at 11% (Bickel, 1988; Fried et al., 1996; Levinson et al., 1991; Tesch et al., 1995). Bickel & Whiting (1990) noted that the percentage of women faculty holding full professor rank was seven percent in 1978 and, after a decade of increasing enrollment of women medical graduates, was nine percent in 1990. The percentage of women medical school faculty members holding associate or full professor rank remains well below that for men. After a mean of 11 years on a medical school faculty, the proportion of women that had achieved associate or full professor rank was vastly lower than their male counterparts with five percent of women achieving full professor rank as compared to 23% of men (Tesch et al., 1995). Despite the increasing representation of women on medical school faculty, relatively few had achieved positions of leadership (Bickel & Green, 1992). The gender distribution of faculty in leadership positions are unequal, and even when they do advance, women move through the ranks of leadership more slowly (Ash et al., 2004b; Buckley et al., 2000; Cropsey et al., 2008; Tesch et al., 1995). Nonnemaker (2000) analyzed data on all graduates of U.S. medical school, over a two decade period and observed that the proportion of women who advanced to the senior ranks of academic medicine was lower than that of their male colleagues. The cohort analysis also allowed for "longitudinal tracking of not only the numbers of women who advanced but also the total numbers of women at each academic rank." (p.402). The Association of the American Medical College's Increasing Women's Leadership Project Implementation Committee compared statistics from 1995 to 2001 on the advancement of women in academic medicine and reported that full-time women faculty in medical schools increased from 25% to only 28%, while women full professors increased from 10% to only 12% (Bickel et al., 2002). Similarly, Helwig et al. (1995) reported that, after adjustment for productivity factors, women were less likely to be

associate or full professors, thus concluding that women physicians were promoted more slowly than men and the rank disparities could be not explained by the level of productivity (p. 1022).

Several studies have attempted to offer possible explanations for gender differences in women achieving senior rank. Some of the reasons for this disparity could be lack of preparation among women towards post-doctoral responsibilities, an unclear comprehension of the criteria for promotion and tenure, and a gender bias in resources allocation including office and laboratory space, startup funds, protected time (Carr et al., 1993; Schaller, 1990). Other studies have also noted that women reported less academic productivity in terms of hours worked, publications, and grants received, and hence were less likely to be promoted, whether it be assistant to associate to full professor, or non-tenure to tenure-track or part-time to full-time status (Levey, Gentile, Jolly, Beaty, & Levey, 1990; Tesch et al., 1995). One study suggests that women actually do rapidly progress through the academic promotional tracks, but it is the relative increase in numbers of women entering academic medicine has actually tilted the overall rank distribution towards the more junior ranks (Nickerson et al., 1990). Some studies has found that women tend to spend longer periods at lower ranks, but not due to lesser productivity related to child-rearing or other factors (Wallis, Gilder, & Thaler, 1981). Another possible explanation for this lag in advancement is the initial decision taken by women to join departments in which the overall probability of promotion is low; a hypothesis that is supported by a survey conducted by Whiting and Bickel, (1990). Also the great disparity between the proportions of women enrolled as students in medical schools and the proportion of women who hold senior faculty positions may discourage women from pursuing academic careers in the future (Nonnemaker, 2000). Similarly, the failure of women to achieve senior academic rank has been cited as one reason that women rarely hold leadership positions in academic medicine (Levinson & Weiner,

1991). While this appears to be a circular argument, there, indeed, is a rationale. Last but not the least, it is possible that decreasing proportion of women at leadership positions in academic medical centers is due to the greater attrition from these higher academic ranks (Tesch et al., 1995). Cropsey et al. (2008) surveyed 166 medical school faculty who left the school of medicine over a period of four years – from 2001 to 2005 and observed that the attrition of women was 9.1% as compared with 7.7% for men. Concurrently there was a decline from 15% to 14% in the tenured status among women faculty. The most common reasons for leaving were chairman/departmental leadership issues, career/professional advancement, low salary and diverse personal reasons (Cropsey et al., 2008).

### 2.3.3 Environmental Factors - Salary Inequity

Gender disparities also exist with respect to the income of women in medicine which remains consistently lower than that of men (Ness et al., 2000). Wolfe (2005) reported that "Even when allowances are made for years in practice and specialty, *women in medicine overall made 63 cents on the dollar compared with men* (Weinberg, 2004)*"* (p. 1284 italics by author). Katherine Mangan, in her study of women in academic medicine, reported that "women earned significantly less than men did, even when their professional activities and qualifications were comparable." Based on a 2007 survey of 3080 randomly selected researchers in life-science departments at 50 academic medical centers, Mangan reported that:

> . . . female researchers earned $6,000 to $13,000 less per year than comparably qualified men. The gap widened to $15,000 a year for faculty members in departments of

medicine. Over a 30-year career, the average female faculty member with a doctorate would earn $215,000 less than a similarly qualified man.

In their study on female ear, neck, and throat physicians, Grandis et al.,(2004), reported that these physicians made 15% to 20% less per year than male peers, after taking into account professional practice hours, hours spent in surgery, type of practice and years since residency. A University of Pittsburgh study surveyed internists in all practice settings in Pennsylvania and discovered that, after adjusting for age, practice characteristics, family characteristics, and training, women earned 14% less per hour than men (Ness et al., 2000). In support of this trend seen in academic medicine, a national study at Harvard, published in *Science*, surveyed the patterns of pay and promotion among women in academic medicine and reported that female academic physicians made nearly $12,000 less than their male counterparts (Bhattacharjee, 2004).

Women were significantly more likely to be hired at a lower salary than their male counterparts when accepting a new position. This was more so when they changed positions to another academic institution rather than at their initial hiring at the school of medicine (Cropsey et al., 2008). Possibly women were unable to effectively negotiate terms related to salary and hence accepted modest offers at their new institutions. Whatever the reason, salary inequity is one of the main reasons for faculty departure among women in US medical schools.

### 2.3.4 Environmental Factors - Mentoring

In a study about increasing leadership roles for women in academic medicine, Bickel et al. (2002) reported that department chairs universally acknowledged that traditional gender roles,

sexism in the medical environment, and lack of effective mentoring presented significant barriers to the advancement of women medical faculty. Referring to this disparity in advancement between men and women, Nonnemaker emphasized not only the importance of equal opportunities but also the need for role models. De Angelis, in her study, goes a step further and proposes that having the right mentor is more important than having a role model (De Angelis, 2000).

The barriers to effective mentoring for women faculty in academic medicine seem to be multifactorial. Firstly, due to obvious gender differences, many men have difficulty mentoring women. The lack of women faculty at senior levels to provide mentoring further complicates this problem. Female mentors would be more sensitive to the needs of the women in junior positions (De Angelis, 2000). However, there is vast underrepresentation by women in the higher levels of appointments and authoritative posts. As mentioned earlier, although more women medical graduates joined medical school faculty, only 10.7% of them attained full professorship (Wolfe, 2005). Most women remain instructors or assistant professors, and these percentages have remained constant for at least 15 years. Only 47% of women with 15 to 19 years of service had become full professors (Ash et al., 2004a) and the total number of deanships is also grossly unsatisfactory (Wolfe, 2005, p.1284). Secondly, both men and women, tend to unconsciously devalue women's work and permit women "a narrower band of assertive behavior" (Bickel, Wara, Atkinson, et al., 2002; Valian, 1999). Combined with the fact that they tend to have 'surplus visibility', women who make mistakes, are less likely than men, in similar circumstances, to be given a second chance (Rhode, 1999).

So, how important really is mentoring to the career of women in academic medicine? Some studies have attempted to define the quality and role of mentoring in helping women to

successfully advance in their academic medical careers. These studies have reported positive impacts of mentoring on the career development and research productivity for women (Illes, Glover, Wexler, Leung, & Glazer, 2000; Palepu et al., 1998; Sambunjak, Straus, & Marusić, 2006; Tracy, Jagsi, Starr, & Tarbell, 2004). Faculty and professional organizations have also joined in and voiced strong support for enhanced mentoring (Jones & Stanton, 2004; Shrier, Shrier, Rich, & Greenberg, 2006).

For this reason Blood et al. (2012), undertook a "structural survey of women faculty in order to better understand the specific characteristics and components of mentoring desired, especially as they related to having children, working part-time vs. full-time, research focus, and academic rank" (p.2). The survey reported that although 54% of women faculty had a mentor, a significant number of them reported that their mentoring needs were unmet and identified this lack of mentorship as an obstacle to their career advancement. Adequate mentorship not only boosts research productivity, it also has a positive influence on self-confidence, career choice and overall personal development, and career success (Blood et al., 2012; Sambunjak et al., 2006). Mentoring also enhances the sense of support for faculty careers, both, at the departmental and institutional level (Morahan, Gold, & Bickel, 2002; Tracy et al., 2004). Protégés, mentors, and organizations benefit from these mentoring learning relationships (Zellers, Howard, & Barcic, 2008).

On the other hand, ineffective mentoring is a possible reason for the unequal representation of women at higher academic ranks (Files, Blair, Mayer, & Ko, 2008). Inadequate or ineffective mentoring can jeopardize career success due to lack of guidance in areas like work-life balance, hiring negotiations and national recognition (Bowles, Kevorkian, & Rintala, 2007; Caniano, Sonnino, & Paolo, 2004; Kalet, Fletcher, Ferdman, & Bickell, 2006).

A national survey of 558 full-time faculty women, aged 50 years and younger, in departments of medicine in the United States reported that mentored women succeeded in having more publications and spent more time on research activity than those without mentors. As a result these women reported higher levels of overall career satisfaction than those without mentors (Levinson et al., 1991). In addition to the access of adequate mentoring, women medical faculty faced many more challenges than men in obtaining career-advancement mentoring. In the workforce of academic medicine, women in positions of authority are in short supply and therefore the demand for same-culture mentoring cannot be met (Zellers et al., 2008). As a consequence, there is a lack of 'social capital' and hence essential information. This isolation further restricts women's capacity for taking on risk thereby resulting in general avoidance of pursuing their professional goals and hampering their career advancement (Etzkowitz, Kemelgor, & Uzzi, 2000).Thus there is general consensus that mentoring and role models are important in medicine, especially for those who choose to go into research and academics (Wolfe, 2005).

## 2.4 INTERNAL FACTORS

In addition to the environmental factors discussed in the preceding section, there are internal factors, too, that affect the advancement of women faculty in academic medical centers. These factors result from the different perspectives women have regarding career success, balancing family life and achievement of professional and national recognition (Buckley et al., 2000).

### 2.4.1 Internal Factors – Attitudinal Differences – I think like a Woman

While this may seem an abstract concept, women's perspectives, inadvertently, become a barrier for themselves in the professional success. Studies related to career satisfaction and financial rewards have reported that although women physicians are generally satisfied with their careers, if they had to choose again, 38 percent might change their specialty and 31 percent might not even choose medicine (Frank & Dingle, 1999). Maximum dissatisfaction was reported by women who were younger in age, had the least work control, most work stress, and experienced severe harassment (Heru, 2005).

Even when it comes to patient care, there are disparities that exist in the practice-patterns between female and male physicians. Women  medical faculty were more interested in patient care than conducting research (Bennett & Nickerson, 1992; Froom & Bickel, 1996). They are more focused on improved patient outcome (Charon, Greene, & Adelman, 1994) and possess more patient-centered communication skills than men (Roter & Hall, 2006). Howard Brody, a prominent family physician, admits that women are devalued in the dominant medical culture. He considers it to be in the interest of patients with psychosocial problems that they be treated with a "humane interview" rather than prohibitively expensive diagnostic tests and medication. He recommends that the skills of women physicians should be taught to all physicians in medical school (Brody, 1993). However, in spite of women having a more considerate attitude to patient care, women physicians receive lower academic recognition and financial compensation as compared to men. Heru's study concluded that although women physicians tended to be more patient-friendly, they worked for fewer hours, hence associated with lower incomes. As a result of this, women rose slower through the ranks and were significantly less likely to be in positions

where they could influence teaching, research, policies and academic interests. These differences have created a new hierarchical distinction within the medical profession. While at the top remain the male power brokers, there is now a separate new tier, below the [male] power brokers that is made up predominantly of women and is referred to as the "pink collar" tier (De Arellano, 1990; Heru, 2005).

Kaplan, in a survey of pediatric faculty at academic medical centers, concluded that women faculty were less interested in research and published lesser than the male faculty (Kaplan et al., 1996). Since scientific publications and national recognition are important for promotion, the paucity of this adversely affected the promotion of women (Buckley et al., 2000). According to Kaplan et al., women faculty in pediatrics had less aspiration towards becoming division head, department chair and dean. Some other reasons for lower research productivity of women can be explained by (a) lack of interest in research (Carr et al., 1993; Kaplan et al., 1996; Levey et al., 1990); (b) less aspirations and lower career motivation (Beaty, Babbot, Higgins, Jolly, & Levey, 1986; Levey et al., 1990); (c)subtle gender bias leading to demoralization or harassment (Barnett et al., 1998; Bennett & Nickerson, 1992), and networking (Hitchcock & Bland, 1995). Emphasizing the importance of networking in academic progress, Hitchcock and Bland concluded that women's networks tended to include fewer super-ordinates and colleagues from previous institutions. Inefficient networking was seen more so in women with young children and familial obligations, a significant factor that is discussed in detail in the following section.

Women also feel that they are marginalized and not taken seriously, often being treated like teenagers or termed 'disruptive' to the department when they speak up (Conrad et al., 2010). This attitude undermined the confidence of women by making them feel inexperienced, doubting

themselves regarding knowledge of issues at hand, and "perceived ramifications for speaking up". Women have been socialized into believing that "they need to be at a certain level of experience or meet certain qualifications whereas, men do not question their own level of knowledge or experience" (p. 803).

### 2.4.2 Internal Factors – Work and Life Imbalance and Research Productivity

De Angelis, (2000) commented that:

> Equal opportunity is not possible for women in academia because only women can bear children and it is they who have the primary (and often nearly total) responsibility for the care of children. In 1981, Angell discussed the effects of bearing and caring for children on academic careers. Not much, if anything, has changed since then – or since the first mother entered academic medicine.

Citing an example of a young woman physician who, after delivering her baby, was helped by the male head of her department to stay on track for her doctorate, De Angelis insists, that while such interventions and allowances for part-time work or child-leave do help, the consequences of such help put women at a disadvantage in "competing with male faculty members who expend all their time and energy on their academic work and professional advancement."

The dilemma of balancing work and family obligations is enhanced by the fact that junior-level women faculty are expected to be most productive and prolific, a phase in life that coincides with their child-raising years. Julia Draznin (2004) emphasized that "this [was] the predicament of every driven, intelligent, professional woman who [had] the curiosity,

determination and desire to challenge herself professionally while yearning for a calm and tender life with her family" (p.289). Like DeAngelis, Draznin is also certain that part-time work is not the answer to this predicament. According to her, a part-timer cannot be competitive in the world of science, where others work 80 – 100 hours a week and are constantly reading, writing, and working. It would not be a wise decision for junior-level faculty to slow down their career at the point when it is necessary for them to be the most industrious (Draznin, 2004, p.290). Perhaps, because of these complex circumstances, many women feel compelled to drop out of the academic pipeline.

As Phoebe Leboy pointed out, although more women were entering schools of medicine now than they did earlier (Bickel, Wara, Atkinson, et al., 2002; Pell, 1996), "they're dropping out because the pipeline gets so clogged with crud that you can't get through if you're a woman." The 'crud' according to her, is primarily a raising of the 'expectations bar' that harms women faculty more it harms men. After recording data from 24 medical schools in 2006, she found that seven of the most elite medical schools were hiring few junior females and those who had joined were dropping out. Leboy's study reported that at Penn's medical school, the departments of basic sciences had only four female assistant professors as compared to fourteen a decade earlier. She blamed a set of family-unfriendly obstacles that made life "unattractive" for young women faculty, such as tenure-clocks that coincided with child-bearing years, traditions of holding early and late meetings, lack of part-time tenure-tracks, and institutional policies that disregarded children and parental and family leaves (Osborn et al., 1992; Pell, 1996). Child-care has also been identified as an important limiting issue in the ascendancy of female clinical researcher physicians-in-training (O'Hara, 2009). In their study of academic faculty across the U.S, Carr et al concluded that women with children had less career-satisfaction than their male counterparts

who had children. They reported that, as compared to men with children, women faculty with children had less institutional support, which is important for maintaining productivity (Carr et al., 1998).

While some studies have shown that women clinical faculty have a hard time balancing their personal lives and controlling their work lives (e.g. patient load, office scheduling) and more likely to burn out (Mcmurray et al., 2000), attrition of women faculty in academic medicine is more apparent in non-clinical research fields. This is because in non-clinical fields there a continuously increasing expectations bar, which is extremely important for success. Women with children had far fewer peer-reviewed publications than men (Beaty, Babbot, Higgins, Jolly, & Levey, 1986; Janet Bickel, 1988;Carr et al., 1993; Kaplan et al., 1996; Levey et al., 1990; Long, 1992; Tesch et al., 1995; Wilkinson & Linde, 1996). Leboy reported that while female researchers earned 42% of the NIH's lower-level "career development" awards, they were awarded only 25% of regular research grants and less than 20 percent of the larger "center" and small business innovation research grants by the NIH. Only 17%of NIH-funded research proposals at medical schools had women as their primary investigators. These factors trigger a vicious circle that severely impacts the academic success of women medical faculty. At the gathering of the Bethesda chapter of the Association for Women in Science, Leboy (2007) said that "You've got postdocs who don't end up in tenure track positions, tenure track professors who don't get tenure, and tenured professors who don't end up to be department chairs, deans, and the like" (Lederman, 2007). Although these numbers are discouraging to women faculty, Leboy emphasized that it was crucial for women to continue working in academic medicine, because it impacted the next generation of women faculty members, who were likelier to stay in the field if they their saw role models in the classrooms (Lederman, 2007).

## 2.5 INTERVENTIONS TO RETAIN WOMEN FACULTY IN ACADEMIC MEDICINE

Attrition of women medical faculty is a very real and serious concern of universities across the United States. In light of this, universities and medical departments are seriously addressing the issues regarding the barriers to the advancement and attrition of women faculty as evidenced by the vast number of institution-led initiatives. Given the leadership initiatives and appropriate allocation resources, most of the reasons cited for women faculty attrition are open to interventions and avoidable (Cropsey et al., 2008).

In an ideal situation, the introduction of Title IX of the educational amendments of 1972 which prohibits gender discrimination in institutions receiving federal funds, should have made redundant the need for programs related to "women in medicine" (Burrow et al., 1996). This would be possible only with the full cooperation of men, so that they work with women, in order to improve mentoring, eliminating gender bias, adding flexibility to institutional policies and creating resources for day care. This is all the more significant because such interventions are needed to improve the work environment and for the humanizing of education which will have a positive effect on both sexes, which, in turn, will improve patient care (Burrow et al., 1996).

The AAMC reported that 21% of American medical schools have a standing committee on gender equity/women's advancement (Bickel, Clark, & Lawson, 1999). A number of institution-led initiatives to support women in their careers has been outlined by Bickel et al. (1996), as have results of program evaluations and recommendations on how to plan and structure such programs (Reed & Buddeberg-Fischer, 2001). Some of the initiatives that have been introduced are: (a) programs to instill awareness of gender issues, new policy statements,

strategies to deal with sexual harassment.; (b) formal mentoring programs; (c) programs to assist in career-building and reaching professional goals and also to help develop job skills; (d) interventions to remove salary inequities (Reed & Buddeberg-Fischer, 2001).

There are a few notable institutions that have taken active measures to make changes; the medical centers of these institutions are ranked high in the country, the following discusses some of the steps each institution has initiated.

### 2.5.1 Johns Hopkins University

The Department of Medicine at the Johns Hopkins University (JHU) introduced multiple interventions as 5-year plans, in order to identify and correct gender-based career hurdles (Fried et al., 1996). Leadership, education, isolation from information, faculty development, salary inequities, mentoring, and other structural obstacles, were the main issues that were addressed by these interventions. There was regular monitoring and evaluation of the intervention programs.

Improvements for a number of career obstacles (timely promotions, access of information for faculty development, isolation, mentoring, and salary equity) were reported by the faculty. Most importantly, there was a decline in the attrition of women faculty, with the retention and promotion of junior women. There was a 550% increase in the number of female associate professors between 1990 and 1995 (Fried et al., 1996). This study from the Johns Hopkins University School of Medicine, suggested that a multi-faceted intervention can be successful in decreasing gender bias by increasing promotions and salary equity for women faculty.

In recent years, the success seen during the onset of the initial interventions seems to be fading. With times changing and faculty needs evolving renewed interventions help improve

retention issues. Some of the suggested interventions for JHU include faculty development that encourages collaboration and propagation of work; improve orientation of faculty to the promotion process, and career paths (Thomas et al., 2004).

### 2.5.2 Massachusetts General Hospital

Jagsi, Butterton, Starr, & Tarbell, (2007) reported interventions designed to improve the known disparities among female faculty at the Massachusetts General Hospital, Boston (MGH), which is a teaching affiliate of Harvard Medical School. MGH initiated a competitive awards program that provided modest amounts of flexible research funding ($30,000 per year for two years) for junior faculty. The MGH Committee on Women in Academic Medicine sought "to design a concrete, focused initiative" (p.343) to support faculty members who had the additional responsibilities for the care of children. As a result of this initiative, the Claflin Distinguished Scholar Awards was established in 1997, offering targeted financial support to help the research efforts of women junior faculty during the period of child-rearing with its increased personal responsibility. These awards were intended to serve as a practical intervention to help advance more women to senior faculty positions. The authors found that the 5-year retention for award recipients was over 90%, a percentage that compared favorably against the 68% of award non-recipients (Nattinger, 2007) and also the 10-year national retention average of 50% (Tesch et al., 1995). The results in terms of publications and grant support were also impressive, with 32 award recipients from 1997 – 2004 being principal investigators on grants totaling over $51 million.

In spite of its relatively modest funding, the MGH program was a success mainly because the receipt of this funding changed the perceptions of the junior female faculty regarding the supportive atmosphere of the institutional environment. This enhanced the confidence of junior women faculty, and which in-turn increased their chairs' confidence that the young faculty would be successful. In addition, the funding was quite flexible in its use by the recipients and also helped ameliorate any gender disparities in the start-up packages of the junior faculty, all of which are important factors to a successful faculty career.

### 2.5.3 UCSF

In an effort to promote women faculty in academic medicine, the women leaders at University of California, San Francisco (UCSF) instituted a program which was funded by the Chancellor's office. The Chancellors Advisory Committee on the Status of Women evaluates the issues regarding the status of women on UCSF's campus. The program was developed entirely by women faculty and it included faculty and staff from all four health science schools on the UCSF campus. The agenda of this program was to provide women faculty with networking opportunities in an informal setting, especially for women who felt isolated in their departments, hospital offices and laboratories (Osborn et al., 1992). As part of this initiative, all department chairs were expected to have annual meetings with their junior faculty to discuss career planning and progress towards tenure.

Another program was begun in 2003 by the Women's Medical Student Association wherein small groups of women medical students were paired with one or two women faculty members according to their interests. The association also hosted an annual retreat where women

faculty and house staff were invited to join in panel discussions about career choices and balancing personal and work-related responsibilities. As of the report, the student-faculty advisor system currently had over 28 women faculty who served as curriculum and career advisors for the students (Osborn et al., 1992).

Another important intervention by UCSF has been the adoption of a version of 'clock stopping' for all tenure-track faculty, in order to reduce the stress of an academic career on families. This permits faculty members to, within two years after the birth or adoption of a child or the illness of a family-member, postpone their tenure promotion by up to one year. Faculty are given six weeks leave with pay and up to nine months without pay in the event of child-bearing /child-rearing (Osborn et al., 1992). In addition to the one year of child-bearing leave, faculty were allowed to work 75% time for a period of time. Since children need a continuous commitment than just one year, the Committee on academic promotions also came up with a more generous proposal and recommended that assistant professors be allowed to take up to eleven years rather than the traditional seven or eight to reach the associate professor level with pretenure reviews at 4 and 8 years to ensure that the faculty member's career was moving in the right direction (Osborn et al., 1992).

In efforts of increasing diversity among their faculty, UCSF's Chancellor's Committee on Cultural Diversity recommended that all tenure-track positions in certain departments be preferentially filled by members of minorities and women, if at all possible (Gibson, R.D. [Chairman] 1989). The associate dean for academic affairs and the vice-chancellor for minority affairs worked were involved with faculty search committees and directed them to prioritize women and minorities for new positions (Osborn et al., 1992).

### 2.5.4 Stanford University

Stanford University initiated a study to examine gender perceptions in its own institution and the effectiveness of a universal training program designed to reduce sexual harassment, gender discrimination and gender insensitivity (Jacobs, Bergen, & Korn, 2000). After the training program was introduced, the institution's environment showed substantial improvement in faculty's and staff's perception about gender issues (Jacobs et al., 2000). With the intention to prioritize women faculty's needs for both career advancement and environmental comfort, a follow up study conducted, wherein respondents answered the same set of items in the survey (McGuire, Bergen, & Polan, 2004). The results of this study were presented to the senior leadership of Stanford University School of Medicine and the dean's office implemented the recommendations to provide the necessary support to women faculty members. Since then, several of the recommendations are already in place, such as the possibility of part-time positions and availability of sabbatical time from clinical and administrative work for both tenure-line and medical center line faculty, so that women faculty can focus on writing grants and papers.

### 2.5.5 University of Wisconsin

Based on the survey by Foster et al., 2000, on gender-climate and work environment at the academic medical center of the University of Wisconsin (UW), 12 recommendations were made to the leadership of UW Medical School;

Increase women's networking opportunities via 'First Fridays' conference series, to which local and national women leaders would be invited as speakers; 2) Develop a

Medical School Faculty Mentoring Program with ties to the Campus-wide Women Faculty Mentoring Program; 3) Hire an ombudsperson to track and address climate issues and other faculty concerns, such as denigration, harassment, and misuse of intellectual property; 4) Focus on the policy development role of the Faculty, Equity and Diversity Committee; 5) Introduce a gender climate video for use within the medical school; 6) Provide professional development seminars for all faculty; 7) Nominate a special assistant to the dean to independently track gender issues and initiate further efforts; 8) Hold fewer 7AM, 5PM, and weekend meetings; 9) Develop resources for routine as well as unanticipated childcare; 10) Evaluate gender equity in compensations; 11) Allow for possible faculty track changes and 12) Annual reports by department chairs to the dean, regarding progress in improving gender climate.

The researchers claimed that the process of conducting and discussing this survey itself contributed substantially to the development of, both, women's professional health and a cadre of individuals interested in and committed to women's health. They reported that "During this period of time, UW earned a designation as a National Center of Excellence in Women's Health, and the medical school termed the development of a Women's Health and Women's Health Research Center as a strategic priority" (Foster et al., 2000, p.659).

*Table 1*. Matrix showing the different interventions undertaken by prominent academic medical centers in the U.S. to support women faculty, enhance their professional development and prevent attrition.

| Interventions | Johns Hopkins | MGH (Harvard) | UCSF | Wisconsin | Stanford |
|---|---|---|---|---|---|
| Leadership | ■ | | | | |
| Professional development | ■ | ■ | | ■ | |
| Mentoring | ■ | ■ | ■ | ■ | |
| Salary equity | ■ | | | | |
| Targeted financial support | | ■ | | | |
| Networking | | ■ | ■ | ■ | |
| Tenure 'Clock Stopping' | | | ■ | | |
| Gender issues | | | | ■ | ■ |
| AAMC initiatives | ■ | ■ | ■ | | ■ |
| ELAM | ■ | ■ | ■ | ■ | ■ |

### 2.5.6 Association of American Medical Colleges (AAMC)

For over 30 years, the AAMC through its Office on Women has been making efforts to advance women in medicine (Bickel, Croft, & Marshall, 1998; Morahan et al., 2001). The slow advancement of women in medicine led the AAMC's Council of Deans, in 1995, to commission a committee to increase the Number of Women Leaders in Academic Medicine (Froom & Bickel, 1996). Based on the annual benchmarking survey about women in medicine, the AAMC publishes an report and makes recommendations that are executed on an on-going basis (Bickel et al., 1998; Morahan et al., 2001).

In efforts to increase women leadership in medicine, the U.S. Department of Health and Human Services funded Centers of Excellence in Women's Health (Gwinner, Strauss III, Milliken, & Donoghue, 2000). Among other issues that are being addressed by these Centers, are those of recruitment, retention, and promotion of women in academic medicine (Carroll, Dodson,

& Mandel, 1991). Morahan et al., 2001 reported the experiences of seven diverse medical schools that had these Centers and had initiated programs for the successful advancement of women faculty. These included four private medical schools – MCP Hahnemann University, Wake Forest University, University of Pennsylvania, and Boston University – and three public medical schools – Indiana University, University of Michigan, and University of California San Francisco. Activities such as group educational programs, faculty and/or student mentoring programs, along with career counseling and assistance, were directed specifically at women faculty and carried out both formally, through workshops and seminars, and informally, through breakfast/lunch meetings. There were also institutional policies and procedures developed such as child-bearing/adoption leave, stopping the tenure clock, "part-time faculty status without penalty in promotion, dual recruitment of two-career couples, faculty exit interviews, and mechanisms to ensure representation of women faculty on appropriate institutional committee (p. 20). Several Centers also arranged for funds towards initiating travel awards to professional seminars, grants for research on female health and other gender-related issues. The study concluded that when interventions for the progress of women faculty were initiated, such as those for appointment, promotion, retention, and leadership opportunities, there was a positive change in institutional environment for all faculty, regardless of gender or ethnicity (Morahan et al., 2001). In a separate study by McDade, Richman, Jackson, & Morahan, 2004, the authors reported that during the decade preceding the study, academic medical centers had invested significant effort and resources to attract and retain women and were paying increasing attention to helping women faculty build their careers. These efforts were met with considerable success and as a result close to 50% of instructor-level faculty were women.

To assist the advancement of women in administrative roles, the AAMC Office of Women in Medicine began offering a three-day comprehensive Professional Development Seminar targeted to early- and mid-career women faculty. Such programs have assisted junior faculty in learning effective tools for networking and identifying role models in addition to mentoring programs and leadership training, all of which are necessary for professional success in academic medicine (McDade et al., 2004, Bennett & Nickerson, 1992). The characteristics of good leadership have also been reexamined, so that if there is effective collaboration by faculty in order to start up important institutional changes, such faculty can be recognized as leaders (Buckley, Sanders, Shih, & Hampton, 2000). Many medical schools have made conscious efforts to appoint women to major committees to increase the number of women in leadership positions (Levinson & Weiner, 1991). In addition to the AAMC, the American College of Physicians has also emphasized the importance of mentoring programs and provided guidelines for tenure and promotion (Buckley et al., 2000).

### 2.5.7 Interventions by Institutional Leaders

Despite conscious efforts on part of universities to ensure professional success for their women faculty, faculty members have continued to express concern about access to mentoring (Committee on maximizing the potential of women in academic science and engineering; national academy of sciences; national academy of engineering; and institute of medicine, 2006; McGuire et al., 2004). In response to the need for more and better mentoring, some department chairs are creating programs such as “mentor-protégé pairings or mentoring committees assigned to each faculty” (Bickel & Brown, 2005, p.208). Usually created with minimal resources, such

programs can help to assure that trainees and faculty have access to career-advancing advice and are likely to enhance faculty productivity and retention in the long run (Benson, Morahan, Sachdeva, & Richman, 2002). Over the past two decades, many medical schools have initiated faculty development workshops and mentoring programs (Blood et al., 2012). It is important for senior faculty members to establish mentoring programs for junior faculty by enlisting the assistance of the dean and the department heads and formally reporting on progress. With her colleagues, Dr. Catherine De Angelis developed such a mentoring program at Johns Hopkins University which resulted in a substantial increase in the number of women promoted to professor rank. In the last decade of the 20$^{th}$ century, considering Johns Hopkins University School of Medicine has a >100 year history, over 60% of all promotions or appointments of women at the level of professor have taken place (De Angelis, 2000).

Yedidia & Bickel, 2001, in a study on low percentage of women leaders in academic medicine, interviewed 34 chairs and two division chiefs of clinical departments of academic medical schools. The authors concluded that, the prospects for advancement in academic medicine and the traditional gender issues could be fulfilled by effective mentoring. One chair interviewed, stated that he enlisted the commitment of his women faculty to become a mentor in return for his having served as their mentor. This professional investment by faculty would pay significant dividends if they were to wanted take up leadership roles in the future. Although a number of men chairs acknowledged the need for women mentors, they were aware of the fact that, if no women mentors were available it would be their responsibility of the men to do the best they could. One respondent, in fact, strongly believed that it would be better if junior women faculty had male mentors since "limiting women faculty to women mentors…might replicate the differential access to opportunities that had hampered advancement of women in so

many ways" (p. 462). Several of the chairs of clinical departments had attempted to adapt faculty schedules to be more hospitable to women faculty, especially those with young children. To quote one chair:

> When we have meetings that are called in off hours, it's typically the male faculty who can make those meetings. And consequently wind up getting greater administrative responsibilities… If I want to have substantial representation of women, I have to hold those meetings during the regular work day. (p. 458)

While many department chairs were less amenable to restructuring the routine, citing other constraints on scheduling like patient load, clinic schedule, etc., some chairs, who expressed a commitment to surmounting these kinds of logistical complications, tried to follow strategies like taking night calls themselves, for lessening the burden of on-call schedules for young mothers (Yedidia & Bickel, 2001). Many of the chairs also favored the establishment of a policy of extending the tenure probationary period for faculty with heavy family responsibilities, which would mean stopping the tenure clock for extended periods of time. Such policies permit faculty with young children to work part-time and return to full-time status later without any penalty (Yedidia & Bickel, 2001). Some women department chairs noted that it had been possible for them to strike a balance between their academic responsibilities and their personal lives. They believed that women aspiring to be leaders should not presume that the job requirements of a leader make it impossible to have a life:

> I think that it's possible to have a life and to be a department chair. And so I try to provide role modeling like that and some balance. I try to help women and to see that they can do it, and they don't have to do it exactly the same way men do it. (p. 459)

The survey reported widely varied strategies initiated by chairs to correct the prevalence of sexism in their institution. When asked whether these programs were effective, one chair commented that: "I think probably just the fact that there's a program and people talk about it, makes a difference" (p. 461). Termination of a faculty's employment of or dismissal of a student was considered the final recourse used by chairs when dealing with sexism. Three of the 36 department chairs reported that they had been involved in such an action over the preceding year (Yedidia & Bickel, 2001).

### 2.5.8 Executive Leadership in Academic Medicine (ELAM)

ELAM is the most intense level of four national programs available for women faculty in academic health centers who aim for the highest administrative positions within their institutions.; three others being the AAMC Professional Development Seminar for Junior Women in Medicine (3 days), AAMC Professional Development Seminar for Early and Mid-career Women in Medicine (3 days), and the HERS – (Higher Education Resource Services) – Bryn Mawr Summer Institute for Women in Higher Education Administration (21 days). The ELAM program provides a year-long, part-time fellowship for approximately 40 senior women faculty from medical and dental schools.

The ELAM Program for Women which is part of the Institute for Women's Health at Medical College of Pennsylvania Hahnemann University in Philadelphia, PA, was launched in 1995 to provide intervention to speed up the promotion of women to senior positions. Interestingly, the Medical College of Pennsylvania also happens to be the first women's medical school in the United States. The gender theorists Ely and Meyerson, classify four approaches to

amend the gender problems: “fixing the woman, valuing the feminine leadership skills, creating equal opportunities and revising the work culture” (Ely & Meyerson, 2000). The ELAM program includes all four of these approaches in order to affect the advancement of women faculty (Richman, Morahan, Cohen, & McDade, 2001).

The program addresses the skills and knowledge essential for effective leadership in the 21st century. The effectiveness and impact of this program is documented by longitudinal evaluation which tracks the progress in the leadership qualities of the ELAM fellows. The success of ELAM can be attributed to the inclusion of all four approaches suggested by Ely and Meyerson, (2000). Cultural gender schemas are indirectly dealt with through a requirement that the deans nominate and mentor their ELAM fellows. The deans also have to attend the program’s closing Forum, which helps the deans who are mostly male, to interact intellectually with an equal number of women. During the Forum, the deans examine issues arising from gender bias, effective mentoring, career advancement, and “how to leverage their ELAM investment for the greatest gain for their schools” (Richman et al., 2001, p.275). Institutions with several ELAM alumnae are increasingly focusing on internal programs for women faculty and are reassessing existing policies and recruitment processes (Richman et al., 2001).

ELAM helps midcareer women faculty at associate or full professor rank to enhance their administrative leadership careers in academic medicine. It specifically deals with the relationship of academic research and teaching with healthcare goals. The chief purpose of ELAM is (a) to assist women faculty to aspire for leadership roles within medical/dental schools and health centers, with the possibility of some of them acquiring deanships in their institutions; (b) to enable interventions in improving the environment in academic centers, for women, minorities, and disenfranchised groups through policy and curricular changes. McDade et al. (2004) reported

that the main purpose of the ELAM program was to help women faculty advance into, and succeed in, formal and informal senior leadership positions. The curriculum is planned around building knowledge and skills in the domains of corporate, academic and personal leadership, financial management, communication, institutional changes in policies related to emerging issues in academic medicine, and strategies for career advancement. ELAM enables close interactions among the participants, thereby creating lasting relationships that can remove the existing pervasive isolation of women leaders

ELAM also has an evaluation agenda to assess its impact on individual fellows and on the institutions. The study by McDade et al. (2004), which was the first in a planned series documenting the impact on several cohorts, reported "consistency of improvements in the ELAM participants' self-perceptions of leadership knowledge and skills" (p 306). Even when the ELAM fellows assessed themselves as 'already skilled', prior to attending the program, they reported significant improvements in the general advancement in their careers after completing the program. The gains in leadership knowledge and skills were consistent with the results of the ELAM Program, which has helped women to advance to top leadership positions in academic health centers.

Six major themes were identified as the outcome of the ELAM program: (i) understanding new leadership strategies, (ii) more effective and confident implementation of ideas, (iii) increased confidence and knowledge while dealing with conflicts; (iv) enhancement in the ability to build networking skills, (v) increased awareness of career possibilities, and (vi) improvement in the general ability to succeed. It also foregrounds the meta-theme of this program: "increased knowledge and networks leading to increased confidence" (p 309).

McDade, 2004 reported that, of the 126 full deans of United States medical schools, ten were women of which four were alumnae of the ELAM program. Over 75% of the graduates of the initial three classes were in significant senior positions, including department chairs, center director, senior associate dean, and university vice president. Graduates from ELAM have also moved into leadership positions in health-related fields like healthcare foundation, hospital, or pharmaceutical president or vice president. The study concluded that ELAM participants reported "significant increased skill and confidence in considering the personal and familial ramifications that might be required if they left their current roles for a higher-level leadership role" (McDade et al., 2004, p.307).

Further evaluation of this program, for assessing the positive impact of this program for women, four to five years after completion, confirmed the beneficial effect on ELAM fellows in terms of leadership knowledge, behaviors, and career progression (Dannels et al., 2008). Dannels et al. compared women who participated in ELAM with two related groups: women who applied but were not accepted into the ELAM program (NON group), and women faculty matched from the AAMC Faculty Roster (AAMC group). The AAMC group represented the norm for midcareer women faculty in academic medicine while the NON group provided a comparison group similar to ELAM fellows in general backgrounds and leadership aspirations.

The results of this survey were identical for both , the AAMC and for the NON groups: about 70% of the respondents had full professor status, 23% held leadership positions of chair or higher, 18% spent more than half their time in administrative responsibilities, 28% chaired one or more committees, and 49% aspired to leadership positions within Academic health centers. In contrast, for the same time period, although the ELAM group had similar numbers of participants at the at full professor level (70%), 64% were in leadership positions of chair or higher, 45%

spent a lot of time in administrative responsibilities, 47% chaired one or more committees, and 76% aspired to leadership within academic health centers. Thus this survey supported "the thesis that the ELAM program provided tangible benefits to the women participants in terms of attainment of leadership positions, mastery of leadership competencies, and aspirations to and education in leadership" (p. 494). A survey of U.S. and Canadian medical school deans reported that the deans of institutions which had alumnae of ELAM on their faculty regarded this program as a useful intervention, having a positive effect on the senior women faculty members in the area of leadership knowledge, skills and eligibility for advancement (Dannels et al., 2009). This study documented the effectiveness of this program "from the view of the stakeholders beyond the women scientist/physician participants themselves". Deans at schools with three or more ELAM fellows were statistically more likely to perceive that ELAM fellows had a positive impact on their school (Dannels et al., 2009 p.76).

On completing the ELAM program many alumnae choose to continue their association with members of their own and those of other classes through membership in a separate organization, the Society for Executive Leadership in Academic Medicine (SELAM) (McDade et al., 2004). SELAM is now called Women Executives in Science and Healthcare (WESH).

### 2.5.9 Other Institution Specific Leadership Initiatives

In order to assure that administrative leadership roles in medicine are effectively developed, some academic health centers have created internal leadership development programs to facilitate the acquisition of management and leadership skills (Bickel & Brown, 2005; Morahan et al., 1998). Some also assist the development of up-and-coming and existing

administrative leaders by paying for executive coaching, which can help in enabling professionals to make the best use of their talents and experiences and analyze opportunities and relationships (Berger & Fitzgerald, 2002).

Dr. Nancy Andrews, the dean of Duke University School of Medicine, firmly believes that if institutions were to speed up the emergence of more female deans, they will have to consider women "who have not stepped on every rung of the traditional academic career ladder." She cited her own example of having been an 'atypical' dean candidate, because she had never served as a division chief or a department chair. She supported the fact that Duke University had appointed "a whole cadre of new deans who have had unusual careers," not only for its medical school, but also for several other schools. Andrews considers this "a creative view of leadership [which] will enrich academic medicine" (Andrews, 2007).

The National Institutes of Health (NIH) and Morehouse School of Medicine are among the institutions that have initiated programs to support women in research careers (O'Hara, 2009). In 2007, then-NIH Director Elias A. Zerhouni, MD, created the NIH Working Group for Women in Biomedical Research Careers in response to *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering,* 2007, a report by the National Academy. The working group has taken into consideration the policy recommendations from "Beyond Bias," by including workshops to minimize gender bias; collecting information on demographics outcomes for funding applications; using grant money for dependent care expenses; enabling additional funding for researchers to assist in leave of absence for care-giving purposes (O'Hara, 2009). NIH has committed to achieving some of these goals through funding the research on causal factors and interventions that promote the careers of women in biomedical and behavioral science. The NIH provided about $3 million through eight RO1 awards to

encourage research on the careers of women in biomedical science, besides examining the effectiveness of programs on eliminating sex and gender disparities (NIH working group on women in biomedical careers, n.d.). The *NIH Research Supplements to Promote Re-entry into Biomedical and Behavioral Research Careers* initiative offers opportunities for both women and men who have availed of leave of absences from their research careers for family responsibilities. Scientists are also offered mentorship and support in order to help them re-establish their careers (O'Hara, 2009). The National Academy of Sciences in *Beyond Bias and Barrier,* also recommends additional support for working parents (Committee on maximizing the potential of women in academic science and engineering; national academy of sciences; national academy of engineering; and institute of medicine, 2006).

The University of California has been a pioneer of sorts, in the area of flexible policy for promoting faculty careers, by introducing Family-Friendly Accommodation strategies in 1988. The UC Davis School of Medicine created its own family accommodation policies and insurance benefits for flexibility in the careers of the medical school faculty (Villablanca et al., 2011). It was perceived by the researchers that the majority of faculty of all the schools in their study reported "increased satisfaction just knowing that these policies existed and that they might need to use them in the future" (p. 1494). Providing for child and family care services is an area of concern for some other institutions also. For example, since 2000, Washington University School of Medicine has included both child and elder care as a prepaid employee benefit through the services of the Child Day Care Association of St. Louis (Office of Human Resources, n.d.).

## 2.6 CONCLUSION

Since the early twentieth century, when Florence Sable became the first female faculty at Johns Hopkins School of Medicine in 1903, attention has been focused on the number of women faculty in academic medicine. Over the past century, several studies have noted increase in the number of women joining the medical faculty. While the number of women joining as new faculty has increased, there has not been a proportionate increase in the number of senior women faculty in academic medicine. This indicates that the declining numbers of women in academic medicine is not a "hiring" issue but more likely a "retention" issue.

The causes for women not succeeding at the same pace as men include a complex combination of women's choices, sexism, the glass ceiling effect, salary inequity, constraints in combining family obligations with professional responsibilities, internal factors such as attitude and perception, cultural stereotypes, and lack of mentoring and leadership opportunities (J. Goldstone & R. Goldstone, 2000). The obstacles that face women recruits can be classified into two categories; one in which there are concrete differences in recruitment, positioning, and support offered to female faculty members, and second that includes socio-cultural expectations that are difficult to change (Sonnad & Colletti, 2002). As for the former, some of the reasons for the differences in recruitment, positioning and support of female faculty members are: unsupportive atmosphere, stress, salary, too heavy a workload, and conflicts with family responsibilities. The second group of obstacles is subjective wherein women perceive a gender bias in opportunities for collaborations, networking, and support, that are unrelated to training, background, or experience (Sonnad & Colletti, 2002). To add to the list of obstacles, women (1) more often opt for part-time positions, thus precluding tenure; (2) prefer clinical positions to

positions that value research and publications; and (3) are unclear about criteria for promotion and tenure (Buckley et al., 2000).

These obstacles contribute to the slow pace of women's advancement into leadership positions in academic medicine. The stereotype threat due to which women perform below their actual abilities also plays an important role in the underrepresentation of women in leadership positions (Burgess, Joseph, Van Ryn, & Carnes, 2012). De Angelis reported a sense of disheartenment among junior women faculty over scarcity of women in leadership positions. Women physicians and scientists, who are in their 40s, doubt the possibility of witnessing equity beyond graduate education. This leads to women not advancing professionally and eventually quitting academic medicine. As a result, the leadership potential of many women faculty is wasted (Bickel et al., 2002; Thrall, 2001). When Nancy Andrews was named the first female dean of the Duke University School of Medicine, she made headlines, which made her wonder as to "why should the appointment of a woman dean still be big news in 2007?" (Andrews, 2007). She realized that, with very few exceptions, not much had changed since the 1970's in the barriers to women's full participation in academic medicine. She emphasized the need for gender diversity as being critical in making an institution outstanding. To quote Andrews:

> Over the centuries the Harvard community graduates became diversified in terms of geographic origin, religion, socioeconomic background, sex, race, nationality, and other personal characteristics. It has always seemed to me that it was only by choosing to recruit the individual scholars whom it viewed as the best, regardless of such characteristics, rather than limiting itself to a narrow circle of candidates, that Harvard was able to build a world-class faculty and student body worthy of the reputation it now enjoys (Andrews, 2007).

Limited inclusion in decision-making, lack of transparency and collaborative work and structural hierarchy in organization especially when the tenure of department chairs is indeterminate also affect women's experience and advancement in academic medicine, (Sarfaty et al., 2007). This sense of helplessness to be able to effect change, which is further enhanced by gender discrimination, has a negative effect over psychosocial feelings and creates "a bottleneck for advancement" of women faculty (Conrad et al., 2010).

Correcting the skewed balance of the gender composition of medical institutions should be a priority for academic medical centers. It is necessary that measures be taken to remove career impediments that disadvantage women within the academic community. Since academic centers cannot compete with the private sector in terms of salary, they should, on the contrary, provide a more supportive environment and implement creative solutions to allow flexibility for family and other personal needs. Women faculty offer unique qualities through patient care, research, teaching, and leadership roles and their leaving academic medicine could potentially result in widespread repercussions. By retaining women, academic medicine can achieve diversity and gender parity, besides ensuring the presence of female faculty role models (Levine et al., 2011). Previous studies have shown that interventions to improve the environment for women do not require enormous, additional resources, to encourage women's career advancement (Fried et al., 1996). These might include job sharing, part-time opportunities, or other approaches such as tenure clock stopping, networking opportunities etc. (Fig. 2) (Sonnad & Colletti, 2002, p.418).

A satisfying career is important to ensure the retention and continuance of women faculty in medicine and a supportive campus culture is a baseline necessity for a resolution of some of the issues that act as barriers for women faculty. Senior mentors and role models positively

influence the career advancement of women faculty, who perceive a disparity between individual values and the values of academic institutions. Even for the institutions, which heavily invest in faculty, it proves to be expensive to replace those who leave prematurely. The attrition and the under-representation of women in leadership positions, although not an insurmountable problem, requires timely and effective interventions at the institutional as well as the governmental level.

This section has previewed the literature on studies related to the key dimensions affecting the attrition of women faculty in the school of medicine, the following section outlines the conceptual framework of the elements related to the research question

## 2.7 CONCEPTUAL FRAMEWORK

A conceptual framework illustrates an image of the study and establishes its structure. The framework demonstrates, with words or pictures, the essence of the study (Miles & Huberman, 1994). The study focuses on the reasons why attrition takes place in academic medicine, which in turn, could lead to women faculty dropping out of academic institutions. The goal of institutions is to retain their valuable faculty.

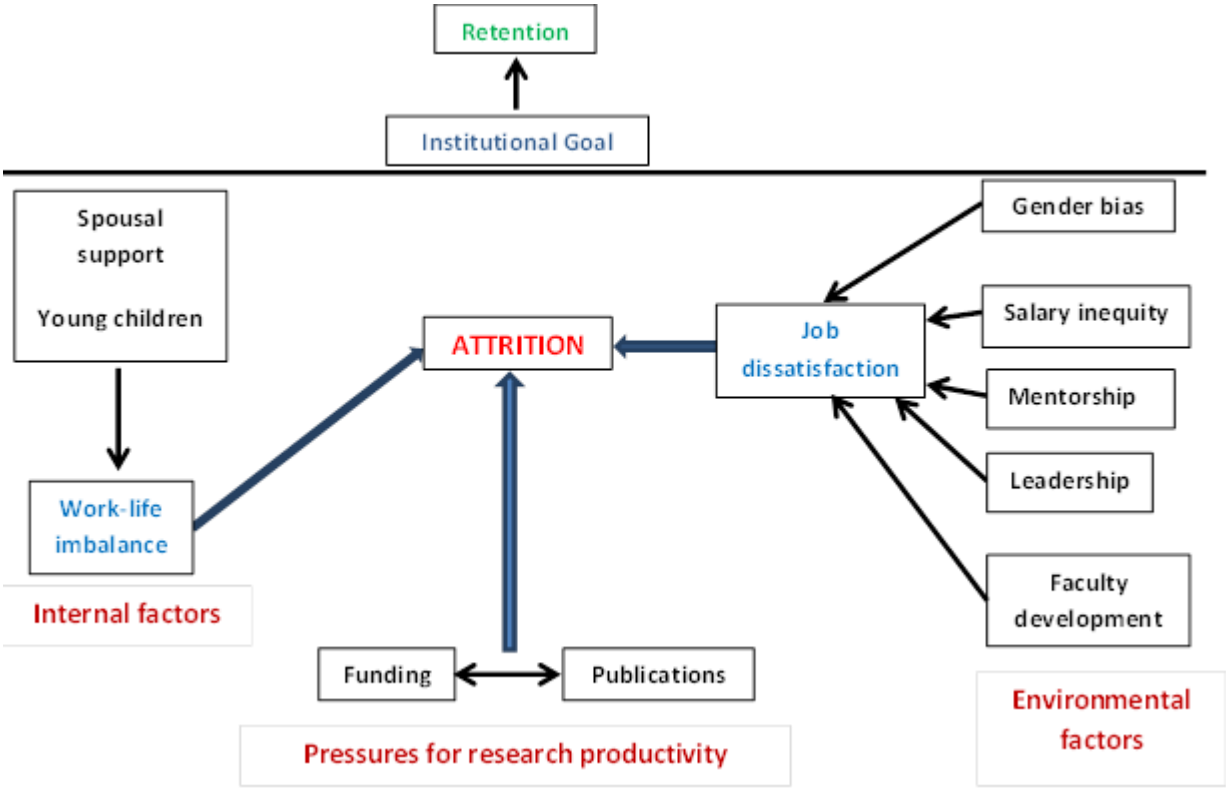


*Figure 5.* Conceptual framework showing the interplay of factors involved in attrition of women faculty in the United States.

Figure 5 shows the conceptual framework developed for the present study. It draws together various variables responsible for retention and attrition of women faculty in academic medicine. Research indicates that retention is a complex and dynamic process. The faculty's decision to stay or leave their current institution is influenced by internal and external factors along with pressures for research productivity. It is a combination of a variety of individual, organizational and external variables. Many variables have a direct impact on decisions of faculty, and also function as precursors to mediate other variables, such as the ones that decide the levels of satisfaction, which in turn affect the decision to leave and ultimately cause attrition. Variables are clustered in three domains – internal factors, environmental factors and pressures for research productivity.

Internal factors are primary aspects related to the faculty as an individual. The personal variables directly influence the work-life balance of the faculty member, in its sole entity or in combination with other variables, affecting the decision of staying in academic medicine. Environmental factors are variables related to the work environment and the faculty's perception of it. The structural variables are gender equity, salary allocation, mentorship, leadership, and faculty development opportunities, all of which determine the faculty's level of satisfaction with their job in academia. Pressure for research productivity is an important factor in academic medicine. Research oriented institutions, such as the University of Pittsburgh, have a strong emphasis on research productivity. Funding obtained through grants is a requirement when on a tenure track position in academia. Prolific publications are encouraged, and the more the faculty publishes the better the chances of getting funding.

The diagram addresses the retention and attrition of women faculty that are skilled and talented; and it is the institution's goal to retain these women. Retention is attained when the institution is able to retain the valued faculty in concurrence with the valued faculty member's desire to remain at the institution. Attrition is caused when this connection cannot be made due to either the faculty member wanting to leave or the inability of the institution to make them stay. This framework has not factored in faculty that has been dismissed by a cause, contract not renewed, or denial of tenure. The programs, as discussed in the literature review, in place at various institutes are for helping the development and retention of faculty at medical schools. The elements of the conceptual framework helped guide the research of this study which in turn offers suggestions to the department of faculty affairs at the School of Medicine, University of Pittsburgh for fostering and maintaining gender equity.

# 3.0 MATERIALS AND METHODS

## 3.1 RESEARCH QUESTION

Women faculty in an academic medical setting show high attrition rates with dropout rates increasing as faculty approach promotion, especially when on a tenure-track. What are the reasons for women faculty to leave academic medicine, at this stage of their career? The broad question for this research was:

What are the important factors that are associated with the likelihood of women faculty attrition from academic medicine/University of Pittsburgh?

## 3.2 RATIONALE FOR QUANTITATIVE DESIGN

Research studies in the social sciences, including humanities utilize two common types of statistical analyses; qualitative and quantitative. Qualitative methods are utilized to analyze data that are non-numerical in nature. In quantitative research, research questions are designed to convert observed phenomena into quantitative data which can, then, be statistically analyzed for answers (Muijs, 2010; Aliaga & Gunderson, 2005). The quantitative method, also known as survey research, is useful for assessing viewpoints, biases, demographics, attitudes, experiences,

and practices. For instance the percentage or the total number of women faculty hired in a particular year at the University of Pittsburgh, School of Medicine or the percentage of women faculty leaving the University of Pittsburgh, School of Medicine, between the years 2009 and 2011. Qualitative, non-numerical methods will not provide the numerical answers that are needed to ensure the research questions.

In the context of the present study the observed phenomenon referred to the attrition of medical school female faculty. Quantitative methods allowed predicting scores on one factor, or variable (for example, faculty recruitment) from scores on one or more other factors, or variables (for example pay, work conditions). There may be data that does not appear quantitative, but these can be quantitatively accumulated by specifically designing the research instrument (in the present case, a questionnaire).

## 3.3 THEORETICAL CONSTRUCT, CONTENT OUTLINE AND DESCRIPTION

A study conducted by Nonnemaker (2000) showed that the rate at which the women joined academic medicine was higher than men, but the rate at which they rose from assistant professor to associate professor was much lower. A survey done by Fried et al. (1996) showed that a number of obstacles were related and had an effect on attrition of women faculty. There were multiple factors that were related to women's slow rates of rising in the ranks and dropping out or changing career paths. Some of the problems identified were related to personal factors such as balancing work and home life; others were more institutional and structural like pressure to conduct research, faculty development, mentoring, leadership, gender equity, and salary

allocation. These aspects led to increased or decreased job satisfaction among women faculty in academic medicine resulting in attrition.

The operationalization of job satisfaction is a concept-by-postulation that can be analyzed using formative indicators like the Likert Satisfaction Scale. The theoretical construct of job satisfaction can be measured from a scale of 1 to 5, with 5= Very Satisfied, 4= Satisfied, 3= Neutral, 2= Dissatisfied, 1= Very Dissatisfied, 9= Not Applicable. The parameter of job satisfaction can be further dissected into its sub parts such as-

- Global satisfaction: satisfaction with general benefits, gender equity, professional relationship, departmental leadership, teaching and other administrative related support. This section also captures the job security and overall job satisfaction of the faculty at the school of medicine.

*Table 2.* Level of satisfaction in various global issues like benefits, students and teaching, professional relations, leadership, gender equity, administrative support, job security and overall satisfaction at the University of Pittsburgh, School of Medicine. (UCLA Graduate School of Education and Information Studies, 2013)

| | |
|---|---|
| Salary | Competency of colleagues |
| Health benefits | Level of respect given for the expression of diverse values and beliefs |
| Retirement benefits | Departmental leadership |
| Quality of students | Level of opportunities given to all faculty regardless of their gender |
| Freedom to determine course content | Quality of facilities like office/lab space |
| Autonomy and independence | Clerical and administrative support provided by the department to help the faculty with paperwork, ordering supplies, scheduling, etc. |
| Professional relationships with other faculty | Job security |
| Social relationships with other faculty | Overall job satisfaction |

- Faculty development: satisfaction with various aspects of collegiality such as career advancement, opportunities provided by the department for professional development, collaboration opportunities, promotion, fulfilling minimum requirements, and reward systems.

*Table 3.* Level of satisfaction with faculty development and expectation of research funding attainment at the University of Pittsburgh, School of Medicine. (August & Waltman, 2004; Levine et al., 2011; The President and Fellows of Harvard College and AAMC, 2009)

| | |
|---|---|
| The department provides opportunities to collaborate with other members of your department | Recognition given by the Chair for exemplary work |
| The pace of your professional advancement at the medical school | Prospects for career advancement |
| The opportunities for professional development provided at the medical school | The amount of research funding you are expected to find |

- Mentoring: satisfaction with aspects of formal mentoring such as departmental provisions for appropriate pairing of mentors and mentees, monitoring progress, and informal mentoring such as interaction with pre/tenured faculty, research collaborations and teaching opportunities.

*Table 4.* Level of satisfaction with mentoring at the University of Pittsburgh, School of Medicine (August & Waltman, 2004; Corrice, Fox, & Bunton, 2011)

| | |
|---|---|
| Quality of your mentoring experience | Amount of personal interaction with tenured faculty |
| Value placed by department faculty on your work | |

- Work – Home Balance: satisfaction with various aspects of work and home such as flexible work hours and schedule, ability to control teaching, research and service

responsibilities in the academic year, services provided for child/elder care, sensitivity towards the faculty's family situation, time off for family duties, pauses in the tenure clock and extensions for women who had a child during the tenure time period.

*Table 5.* Level of satisfaction with work-life balance at the University of Pittsburgh, School of Medicine. (Bunton & Mallon, 2006; Corrice et al., 2011; P.S. Morahan et al., 2001; The President and Fellows of Harvard College and AAMC, 2009; UCLA Graduate School of Education and Information Studies, 2013)

| | |
|---|---|
| Flexible working hours | Ability to balance professional and personal time |
| Tuition waivers, remission or exchange | Having children and tenure track compatibility |
| Support system provided for Child care/Elderly care | |

In order to get the exact notion of happiness with academic medicine, the study captured direct sentiments in dichotomous questions that ask for a yes/no answer. The women faculty estimated their happiness or unhappiness regarding their presence in academic medicine and responded to the below:

*Table 6.* Questions capturing overall satisfaction with academic medicine.

| | |
|---|---|
| I am SATISFIED in academic medicine and would NOT LEAVE | I am DISSATISFIED in academic medicine but would NOT LEAVE |
| I am SATISFIED in academic medicine but would still LEAVE | I am DISSATISFIED in academic medicine and would LEAVE |

Guttman's scale was used to determine the least and most extreme scenario a faculty member would have chosen in the last five years or would be likely to choose in the coming five years. The agreement of any one item implied an agreement with the other lower-order items.

The items mentioned below were created specific to the women faculty at the University of Pittsburgh.

*Table 7.* Questions that depict consideration to leave the University of Pittsburgh in the last five years.

**In the <u>past</u> five years have you**:

| |
|---|
| Taking up a position outside of University of Pittsburgh |
| Taking up a position outside of the city of Pittsburgh |
| Taking up a position outside of Pennsylvania |
| Taking up a position outside of United States |

*Table 8.* Questions that capture intent to leave the University of Pittsburgh, in the next five years.

**In the <u>next</u> five years do you foresee:**

| |
|---|
| Taking up a position outside of University of Pittsburgh |
| Taking up a position outside of the city of Pittsburgh |
| Taking up a position outside of Pennsylvania |
| Taking up a position outside of United States |

One of the most important information collected in the survey is the top reasons why female faculty would decide to leave their position at the University of Pittsburgh, and what would they choose if they left. Two questions captured this measure. The first question asked about the direction they would go to if they resigned:

*Table 9.* Question that shows the possibility a faculty would choose if they decided to resign from the University of Pittsburgh, School of Medicine.

**If you decide to resign (i.e. leave your position at the University of Pittsburgh), will it be for:**

| |
|---|
| Taking up another position within academia |
| Alternate career options outside of academia |
| Staying at home |

The second question asked the faculty to rank, from one to five, the chief five reasons for them to resign; if they choose do so, in the next five years.

*Table 10.* The list of potential reasons to resign from the University of Pittsburgh (Blood et al., 2012; Carnes et al., 2008; P. L. Carr et al., 1998; Conrad et al., 2010; Cropsey et al., 2008; Draznin, 2004; Fried et al., 1996; Sonnad & Colletti, 2002; Straus, Straus, & Tzanetos, 2006)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Low salary | ○ | ○ | ○ | ○ | ○ |
| No flexibility | ○ | ○ | ○ | ○ | ○ |
| Poor benefits | ○ | ○ | ○ | ○ | ○ |
| Less work load | ○ | ○ | ○ | ○ | ○ |
| More work load | ○ | ○ | ○ | ○ | ○ |
| Poor leadership | ○ | ○ | ○ | ○ | ○ |
| No childcare support/facility | ○ | ○ | ○ | ○ | ○ |
| Poor career advancement opportunities | ○ | ○ | ○ | ○ | ○ |
| Poor collegiality | ○ | ○ | ○ | ○ | ○ |
| Lack of peer support | ○ | ○ | ○ | ○ | ○ |
| Poor professional development opportunities | ○ | ○ | ○ | ○ | ○ |
| Poor mentorship | ○ | ○ | ○ | ○ | ○ |
| Pressure to do research | ○ | ○ | ○ | ○ | ○ |
| Pressure to get funding | ○ | ○ | ○ | ○ | ○ |
| Other _____ | ○ | ○ | ○ | ○ | ○ |

Another aspect analyzed was the top five reasons to leave academic medicine. This ranking listed the important factors that would lead to faculty attrition from academic medicine.

*Table 11*. The list of potential reasons to move away from academic medicine. (Blood et al., 2012; Carnes et al., 2008; P. L. Carr et al., 1998; Conrad et al., 2010; Cropsey et al., 2008; Draznin, 2004; Fried et al., 1996; Sonnad & Colletti, 2002; Straus et al., 2006)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Low salary | ○ | ○ | ○ | ○ | ○ |
| Poor flexibility | ○ | ○ | ○ | ○ | ○ |
| Poor benefits | ○ | ○ | ○ | ○ | ○ |
| High work load | ○ | ○ | ○ | ○ | ○ |
| Imbalance between home and work life | ○ | ○ | ○ | ○ | ○ |
| No childcare support/facility | ○ | ○ | ○ | ○ | ○ |
| Poor leadership | ○ | ○ | ○ | ○ | ○ |
| Poor career advancement opportunities | ○ | ○ | ○ | ○ | ○ |
| Poor collegiality | ○ | ○ | ○ | ○ | ○ |
| Lack of peer support | ○ | ○ | ○ | ○ | ○ |
| Poor professional development opportunities | ○ | ○ | ○ | ○ | ○ |
| Poor mentorship | ○ | ○ | ○ | ○ | ○ |
| Pressure to do research | ○ | ○ | ○ | ○ | ○ |
| Pressure to get funding | ○ | ○ | ○ | ○ | ○ |
| Pressure to raise outside research funds | ○ | ○ | ○ | ○ | ○ |
| Pressure to engage in more practice activities to generate funding and support salary | ○ | ○ | ○ | ○ | ○ |
| Other _____ | ○ | ○ | ○ | ○ | ○ |

University of Pittsburgh, School of Medicine provides a few professional development opportunities for women faculty, the following questions determined whether the faculty was informed about these opportunities:

*Table 12.* The three professional development opportunities that the faculty are aware of. (University of Pittsburgh Office of Academic Career Development, 2005, 2014b, 2014c)

| | Yes | No |
|---|---|---|
| Women in medicine and science forum offered by the OACD | ○ | ○ |
| Sunrise series session offered by the OACD | ○ | ○ |
| Course in Scientific Management and Leadership offered by the OACD | ○ | ○ |

The final question that wrapped up the questionnaire is the choice women faculty would make if they had the option of starting their career all over again. It gave them an opportunity to decide if they would again choose academic medicine and still work for the University of Pittsburgh.

*Table 13.* Question that captures the 'true' feelings of women faculty, if they ever choose to restart career again in academic medicine and the University of Pittsburgh (The President and Fellows of Harvard College and AAMC, 2009)

| | Definitely yes | Probably yes | Probably no | Definitely no | Not sure |
|---|---|---|---|---|---|
| Choose to work at this medical school | ○ | ○ | ○ | ○ | ○ |
| Choose an academic career | ○ | ○ | ○ | ○ | ○ |

The questionnaire ended with a qualitative section, where the faculty could provide any additional comments they wanted to share. There were 62 women who chose to write out their

sentiments. The comments ranged over various issues as listed in the questionnaire; not all 62 comments were included in the study. The quotes selected and included, represented each issue as addressed by multiple respondents and did not have any identifiable information.

This study used the literature from Chung, Kim, & Quint, 2011 to formulate the analysis of the data which captured the emotional quotient represented by satisfaction associated with the likelihood of women leaving academic medicine. The validated University of Michigan Medical School faculty survey instrument used by the authors captured the level of satisfaction of faculty in the three fields of teaching, clinical activities and research activities.

The data published on women faculty by Jolliff et al., 2012 and Leadley & Sloane, 2011 shows the figures for faculty by gender, rank, hiring, departing, promotions, and tenure among other things for all the institutions with medical schools. The data published for the University of Pittsburgh helped this study to focus on the potential reasons for women faculty to drop out of academic medicine at the University of Pittsburgh. The study was approved by the Institutional Review Board (IRB) of the University of Pittsburgh.

## 3.4 TARGET POPULATION, SAMPLING FRAME AND METHOD

The study involved analysis of data collected from women faculty in the School of Medicine (SOM) at the University of Pittsburgh. The target population was all women faculty which includes instructors, assistant professors, associate professors and full-professors. Since the purpose of the survey was to determine how women faculty members perceive their jobs, the line items reflect the level of satisfaction with respect to various aspects of a faculty's work-life

which includes job responsibility and support structure. By focusing the survey on faculty who could be potential drop outs, the intention of the survey was to capture the reasons why women faculty would consider leaving the SOM. The hope is to provide direction to faculty affairs about the system-wide changes that would be needed to help retain talented faculty. What is ideally required is a culture that provides equal access to opportunities and resources, encourages a work-life balance, addresses the issue of gender bias and provides leadership support (Westring et al., 2012). Changing these discriminatory practices will require persistent effort, open communication, and a committed effort to diversify faculty.

For this research study, all women faculty were contacted via email provided by the department of faculty affairs. The study is a cross-sectional design, where the data was collected at one point in time. The questionnaire was an internet based self-administered written survey which took about 15 minutes to complete. The response format was structured in a single-response variable format where the respondent was allowed to choose only one answer from multiple choices. This eliminated multiple answers that might have caused problems during data analysis.

The survey was based upon a combination of questions from the Faculty Forward medical faculty survey instrument created in collaboration with AAMC and Collaborative on Academic Careers in Higher Education (COACHE) by the Harvard Graduate School of Education, the Higher Education Research Institute (HERI) faculty survey created by UCLA Graduate School of Education and Information Studies, the information gathered by the wide array of literature review, and self-created items that are relevant and essential for this specific study. The survey instruments have been widely used by numerous institutes and various studies to assess faculty job satisfaction. The Faculty Forward survey instrument targets faculty

population's levels of engagement in the teaching, research, and service enterprise at the faculty's institution, and determines "how supported and satisfied the faculty is with the terms and conditions of their employment at that institution" (Harvard Graduate School of Education, 2008). The Faculty Forward survey covers all aspects of faculty life on and off campus, such as the nature of the work, resources and support, interdisciplinary work, collaboration, mentoring, tenure and promotion, institutional governance and leadership, engagement, work and personal life balance, climate, culture and collegiality, appreciation and recognition, recruitment and retention, and global satisfaction. The data obtained by the Faculty Forward faculty job satisfaction survey help institutions to improve the academic workplace; it "provides provosts and faculty affairs professionals with a roadmap for making sound investments in their faculty" (Harvard Graduate School of Education, 2008). The HERI faculty survey is designed to assess sources of stress and satisfaction of faculty, and faculty perception of institutional goals and priorities, among other issues. "Institutions participating in the HERI Faculty Survey have used the results to provide a faculty perspective on planning and policy analysis, enhance faculty development programming, and improve the student learning experience" (UCLA Graduate School of Education and Information Studies, 2013). The questionnaire used for women faculty at the University of Pittsburgh, SOM contained some verbatim questions from the validated measures of the Faculty Forward and HERI surveys, some modified version of the validated measures that reflected the level of satisfaction, and some that have been indigenously formulated to capture the reasons of attrition pertaining specifically to the case study. The global satisfaction section of the survey instrument was based on the HERI faculty survey item 33 (version 2013-2014), which asked about the satisfaction in the various aspects of the faculty's job: for example, benefits, salary, etc. The faculty development, mentoring and work-home

domains were mainly based on the Faculty Forward survey and the literature. The remaining sections of the survey had been inspired by the literature review and the research questions.

The advantages of administering the survey as an internet based self-administered survey were that it could be administered to a large number of people; there was no interviewer bias; and the increased psychological distance helped to reduce respondent error.

### 3.4.1 Survey Response Rate and Statistics

An email with the link to the survey was sent out by the Department of Faculty Affairs, to all women faculty at the University of Pittsburgh, the School of Medicine (Appendix B1). The faculty identifying information such as email addresses was not disclosed in this study. The survey was sent out once every week for four weeks (Appendix B2). To avoid weekday bias the survey was administered over different weekdays for the 4 successive weeks. The response data collected showed that the tendency of the faculty taking the survey was the maximum on the day it was sent out. The introductory email was sent on Friday, May 16, 2014 and the participants were given one week to respond. The introductory email was followed by reminder emails sent out once every week. The first reminder was sent on Thursday, the second reminder on the alternate Monday, and the last reminder was sent on a Tuesday.

Over a 4-week span of the survey, 299 surveys were recorded. Of these 299 surveys that were recorded, 254 of the respondents answered all of the survey questions and were considered "complete". There were 25 respondents that answered at least one critical question in reference to the satisfaction portion of the survey in addition to the demographic questions. These 25 responses were classified as "partially complete" and were included in the analysis. There were

20 respondents that had completed only the demographic portion of the survey and did not answer at least one question in reference to the satisfaction portion of the survey. These 20 responses were classified as “incomplete” and were excluded from the final analysis. As a result of these inclusion criteria, of the 976 women faculty to whom the survey was sent, there were 279 responses that were analyzed and the calculated survey response rate was 29% (279/976).

As far as the breakdown of responses that were received for the four-week period that the survey was administered, maximum responses were received when the introductory email was sent to the participants. Responses that were received for each of the four survey emails were 118 (42%), 68 (24%), 46 (16%) and 47 (17%) respectively (Figure 6).

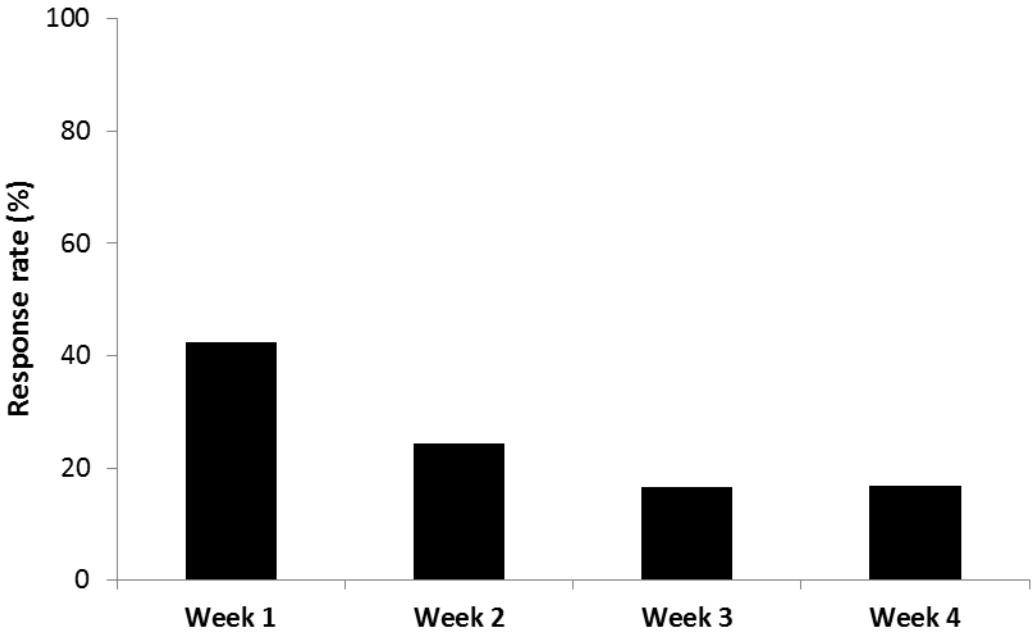


*Figure 6.* Weekly response rate of the survey over a 4-week period.

As far as the response rates for the day that the participants responded to the survey, maximum responses were received on the day the email was sent to the faculty, with greater than

50% of the responses received (range 51-74%). There was a sharp decline in the response rate from day 1 to day 2 with a gradual decline as the week progressed until the reminder email was administered (Figure 7).

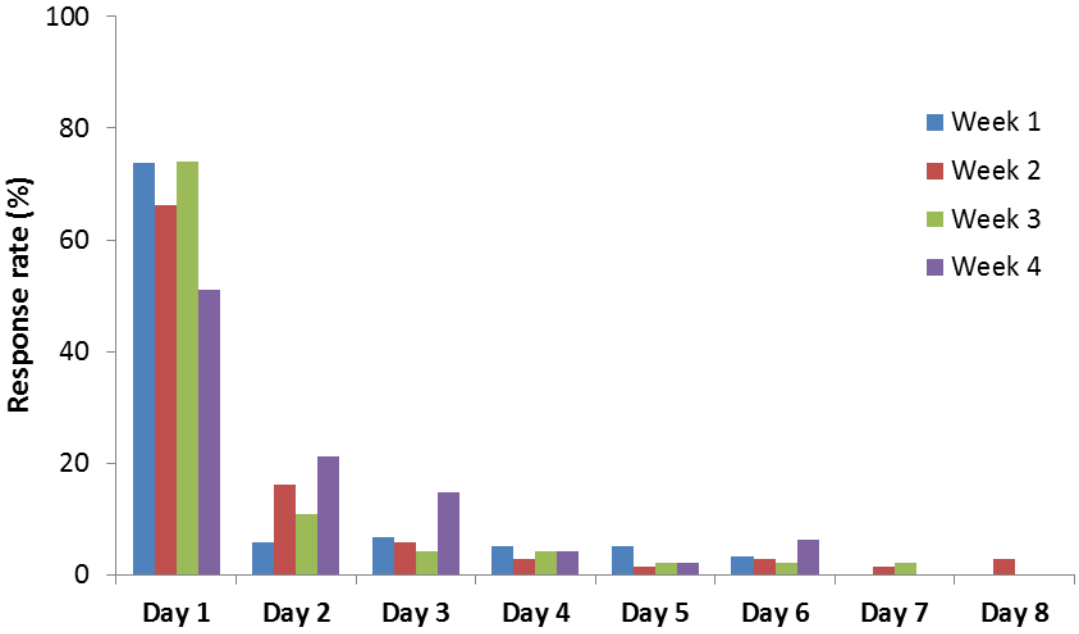


*Figure 7.* Daily response rate of the survey after email was sent to faculty.

### 3.4.2 Survey Cohort and Academic Rank

The survey was sent out to 976 women faculty at the University of Pittsburgh, school of medicine. Of the 976 women faculty, 9% were instructors, 56% were assistant professors, 23% were associate professors and 12% were professors. The 279 respondents consisted of 13 (5%) instructors, 136 (49%) assistant professors, 76 (27%) associate professors and 54 (19%) professors.

As for the tenure status of the 976 women faculty to whom the survey was sent, all of the 90 instructors were non tenured and on either contract positions or non-tenure-track positions. Only 2 assistant professors were tenured and 99.6% (549/551) of the assistant professors were untenured. In contrast to the instructors and assistant professors, 20% (45/222) of the associate professors were tenured whereas 60% (68/113) of the professors had tenure status (Table 14).

*Table 14.* Distribution of women faculty to whom the survey was sent and the responses with respect to tenure status at the University of Pittsburgh, School of Medicine.

| | **Tenure** | | **Non-Tenure (tenure-track/contract)** | | **Total (Tenure+Non-tenure)** | |
|---|---|---|---|---|---|---|
| **Survey** | **Sent** | **Responded** | **Sent** | **Responded** | **Sent** | **Responded** |
| Instructor | 0 | 0 | 90 | 13 | 90 | 13 |
| Assistant Professor | 2 | 2 | 549 | 134 | 551 | 136 |
| Associate Professor | 45 | 18 | 177 | 58 | 222 | 76 |
| Professor | 68 | 33 | 45 | 21 | 113 | 54 |
| Total | 115 | 53 | 861 | 226 | 976 | 279 |

Of the 136 assistant professors who responded to the survey, 28% (38/136) were tenure-track and 72% (98/136) were contract-based. It is to be noted that, for the two tenured assistant professors, probably attainment of tenure was conferred before they received a letter stating their promotion to associate professor. Of the 76 associate professors who responded to the survey, 24% (18/76) had tenure, 13% (10/76) were on tenure-track and the remaining 63% (48/76) were contract-based. Of the 54 professors who responded to the survey, 61% (33/54) were tenured and the remaining 39% (21/54) were in contract positions (Table 14).

The respondents to the survey were generally representative of the typical population of women faculty at SOM (Table 15). Respondents who were assistant professors were slightly under-represented (49% vs. 56%) and professors were slightly over-represented (19% vs. 12%).

*Table 15.* Proportion of women showing representativeness of respondent sample size.

| **Rank** | **Sent** | **Proportion in %** | **Responded** | **Proportion in %** |
|---|---|---|---|---|
| Instructor | 90 | 9 | 13 | 5 |
| Assistant Professor | 551 | 56 | 136 | 49 |
| Associate Professor | 222 | 23 | 76 | 27 |
| Professor | 113 | 12 | 54 | 19 |
| Total | 976 | 100 | 279 | 100 |

Of the 279 women faculty that responded to the survey, 88% (246) were full-time faculty, 11% (30) were part-time faculty; one percent (3) did not reply to the question. In addition, the department of faculty affairs classified, faculty members as being either research, clinical or neither, based on their primary responsibility. To be classified as research faculty, the faculty members are required to devote 90% or greater of their effort performing scientific investigations; for clinical faculty, 90% or greater of effort is required to be devoted to clinical responsibilities. Based on these specific criteria set by the office of faculty affairs, 20% (55) of the survey participants reported themselves as being a research faculty; 22% (61) of the survey participants reported themselves as clinical faculty; and 58% (163) of the survey participants did not have a specific prefix (Table 16).

*Table 16.* Primary responsibility of women faculty who responded to the survey.

| Primary Responsibility | Responses | Proportion (%) |
|---|---|---|
| Research | 55 | 19.71 |
| Clinical | 61 | 21.86 |
| None | 163 | 58.42 |
| Total | 279 | |

The women who chose not to take the survey could have done so due to many reasons, some of which could be 1) fear of being identified since some departments have very few women faculty; 2) reluctance to provide specific information that the survey asks; 3) burden of responding to the survey; 4) perceived lack of value for faculty; and 5) expectations that it will not improve the faculty's working conditions in any way

### 3.4.3 Faculty Rank and Responsibilities

In addition to their official designation by the office of faculty affairs, the survey asked participants to specify their job responsibilities and select all the responsibilities they had to perform under their job description: Research (Funding-related), Teaching (student-related), Clinical (patient-related) and Service (administrative).

As far as instructors were concerned, 92% (12/13) performed research, 54% (7/13) reported having teaching responsibilities, 31% (4/13) had clinical responsibilities whereas only 23% (3/13) reported having service responsibilities. The corresponding numbers for assistant professors were 76% (102/135), 88% (118/135), 60% (81/135) and 61% (83/135). The

corresponding numbers for associate professors were 84% (64/76), 97% (74/76), 62% (47/76) and 83% (63/76). The corresponding numbers for professors were 93% (50/54), 96% (52/54), 56% (30/54), and 87% (47/54) (Figure 8).

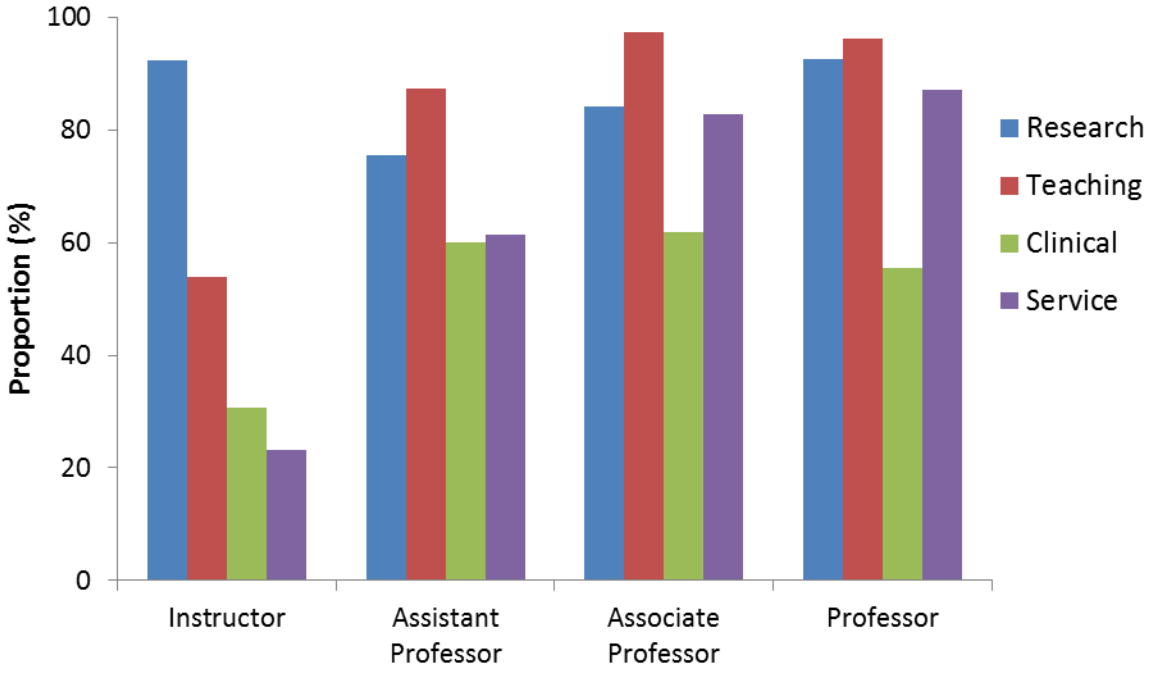


*Figure 8.* Primary academic responsibilities of women faculty across different faculty ranks.

## 3.5 PILOT STUDY AND RECOMMENDED CHANGES

The survey was piloted on three women faculty at the School of Medicine, University of Pittsburgh. One was an instructor, and two were at an assistant professor rank. The pilot was given on a paper copy; the actual survey was online. The faculty was given one week to complete the survey and return it back. The faculty reported that the survey was easy to read and

understand and did not find the questions to be leading towards multiple answers. There was no report of fatigue experienced while completing the survey.

The completed surveys were assessed and the following changes were made to ensure clarity of the instrument:

*Demographics*

1) Item # 5
    a. The prompt was changed to "please write the most appropriate answer".
    b. For highest degree held – the prompt was to enter the name of the degree.
    c. For major of highest degree held – examples were provided like genetics, microbiology, biochemistry, surgery, pediatrics, etc.
    d. The "department of current faculty appointment" was changed to the "department of *primary* faculty appointment", since one person can belong to two different departments with one primary affiliation.
2) Item # 6 was added to capture the specific duties that the faculty needed to perform.

    Which of the following responsibilities do you perform (select all that apply to you), and estimate the percentage effort dedicated to each-

        i. Research _____
        ii. Teaching _____
        iii. Service _____
        iv. Clinical responsibilities _____
3) Item # 10 (number of children)
    a. The prompt should be to enter a number for each age range.
    b. The age range was broken up into – below 5, 6-10, 11-15, 16-18, above 18.

*Global satisfaction*

For the overall organization of this section, the items related to teaching were clustered together, items related to benefits were clustered together, and items related to administrative support were clustered together.

For clerical and administrative support – the item was rewritten to reflect the clerical and administrative support provided by the department to help the faculty with paperwork, ordering supplies, scheduling, etc.

4) Item # 16 – the question was reformatted to capture sentiment about academic medicine.
5) Item # 17 and 18 – the prompt was changed to think about "in the past *five* years…" instead of "*two*".

## 3.6 DATA ANALYSIS

Using SPSS, EXCEL and Qualtrics survey systems, multiple kinds of statistical analysis were performed on the data set. Respondents, whose completion rate was less than half, were excluded. The following analyses were performed-

1) Validity

The questionnaire that was distributed to the women faculty at the School of Medicine, University of Pittsburgh included portions of the HERI and Faculty Forward surveys. The Faculty Forward and HERI faculty job satisfaction surveys were validated questionnaires used by institutes of higher education to determine job satisfaction among faculty. The items 17 through 24 of the questionnaire, measure the elements stated in the literature to

be key components related to attrition of women. The instrument was also reviewed by a statistical analyst and revisions were made based on the feedback provided.

2) Reliability

   a. *Guttman Scale* – for the robustness of the instrument, a subset of the survey following binary answer forms were incorporated the Guttman Scale. The responses to these items span over the least extreme to the most extreme position. The scale also helped in detecting and discarding randomized responses.

   b. *Cronbach's Alpha* – To check for internal consistency, the Cronbach's alpha value was used. A high Cronbach's alpha is desirable when performing survey-based studies and this value increases when the inter-correlations among test items increases. Inter-correlations between test items are maximized when all items measure the same construct. It indicates the degree to which the set of items measures a unidimensional latent construct.

3) Analysis performed –

   a. *T-Test*

   b. *Chi-square test*

For the ease of interpretation the 5-point Likert scale, was combined to a 3-point Likert scale. The analysis was described using frequency histograms. Various cross-tabulations were performed between variables to analyze which variables were the driving influences behind attrition of women faculty. Each section of the conceptual framework, that is, internal factors, environmental factors, and pressures for research productivity were driven by variables impacting the institutional goal of retention.

## 3.7 ASSUMPTIONS

The intention of the survey was to capture the reasons why women faculty choose to leave the University of Pittsburgh. There were a few assumptions made in this instrument –

1) Each female faculty, taking this survey, has a certain level of dissatisfaction with academic medicine in general.
2) There is some amount of dissatisfaction among women faculty with their job at the University of Pittsburgh in particular.
3) There is also a possibility that the faculty was dissatisfied with their job at the University of Pittsburgh, and not necessarily dissatisfied with academic medicine *per se*.

## 3.8 SOURCES OF ERROR

There could be three sources of error – sampling error, non-response / partial-response error and measurement error.

1) Since the type of sampling being used for this study is a one-stage cluster sample; the sampling error could consist of a random error. This error can be addressed by conducting the survey in SOM at other institutions.
2) Non-response error /partial -response error is also a possibility. A larger sample size and appropriate editing and imputational strategies will help reduce this bias.
3) After piloting the survey, information about how the testing environment affected the respondent's performance should be collected. Another option would be to administer

multiple measures of the same construct, the results of which can be correlated and would help with clearer analysis of the data.

# 4.0 RESULTS

This chapter describes the results of the survey and presents the analysis performed on the data collected. The participants of this study responded to a questionnaire that was sent using the Qualtrics online survey software. The chapter is divided into 2 sections; the first section focuses on the breakup and demographic information of the participants (e.g. present academic rank, tenure status at institution, etc.). The second section describes the statistical analysis of the data created by the participant's responses towards the environmental factors such as salary, gender bias, mentoring, leadership, and faculty development that lead to overall job satisfaction. Also discussed in this section are the internal factors such as the elements affecting work-life balance; pressures related to research funding; and lastly the factors causing probable attrition.

To analyze the quantitative data, the software provided by the Qualtrics survey systems, SPSS and EXCEL was used to run the statistical analysis. Listed below are the various statistical measures used to analyze the variables related to this case study:

1) Frequency histograms for each item illustrating proportion of participants choosing a specific response.
2) Student's t-test analysis: Student's t-test (both one-tailed and two-tailed) was performed to determine the difference between mean. T-test p value less than 0.05 indicates that the difference between the means was statistically significant. If the p-value was greater than 0.05, the difference between the means was not statistically significant.

3) The Chi- Square Test was utilized to test whether the relation is significant or not. Graphs illustrating in percentages, the relationship between variables with the most important factor of each category of factors. The null hypothesis was that the satisfaction levels were not significantly different among the faculty ranks. If the p value was less than 0.05 it indicates that the difference between responses among the different groups was statistically significant. If the p-value was greater than 0.05, then the difference between responses among the different groups was not statistically significant.
4) Reliability checks:
    a. Guttman's lower bounds (lambda 1-6): is a set of six coefficients, L1 to L6. The coefficient L3, which is equivalent to Cronbach's alpha, for Q17 is 0.86 and Q18 is also 0.86. Since the L3 coefficient is greater than 0.6, it indicates that that the survey respondents are truly reliable.
    b. Cronbach's Alpha: To check the internal consistency, Cronbach's alpha was used. Alpha equals zero when the true score is not measured at all and there is only an error component. Alpha equals 1.0 when all items measure only the true score and there is no error component. Any alpha values greater than 0.5 indicate that the responses are reliable and are acceptable. Any alpha values less than 0.5 are not acceptable.

*Table 17.* Cronbach's alpha to check internal reliability. Values for environmental factors, internal factors, and factors influencing attrition.

| Category | Cronbach's alpha |
|---|---|
| Faculty development | .790 |
| Resign and take up another position within academia, outside and stay home | .640 |
| Global Satisfaction | .824 |
| Mentoring | .672 |
| Leave Pitt in the next 5 years | .869 |
| OACD | .717 |
| Leave Pitt in the past 5 years | .856 |
| Restart career again | .633 |
| Work-life imbalance | .619 |

5) Analysis of variance (ANOVA): Univariate ANOVA was performed to analyze the overall sentiment of women faculty towards academia. The Null hypothesis for this test was that there was no difference among the selected categories: Satisfied/Not Leave, Satisfied/Leave, Dissatisfied/Not Leave, and Dissatisfied/Leave. If the ANOVA p-value was greater than 0.05, then the null hypothesis is not rejected and there is no difference between the categories. If the ANOVA p-value is less than 0.05, then the null is rejected and that the difference between the four categories is statistically significant.

## 4.1 SURVEY DESCRIPTION

The survey questionnaire was divided into eight parts (Appendix A); first part focused on the demographic information; the second was global satisfaction regarding various aspects related to the faculty's work such as salary, benefits, lab space, etc.; third was related to faculty development; fourth was related to mentorship; fifth was work and home balance issues; sixth was overall sentiment about academic medicine; seventh asked participants about their decision and their reason regarding continuing their career in academic medicine and University of Pittsburgh; and the eighth part asked participants if they were aware of professional development opportunities provided by the University of Pittsburgh. The survey ended with a question that asked participants, if they started their career all over again, would they consider a career option in academic medicine, especially at the University of Pittsburgh, School of Medicine (SOM).

## 4.2 PERCENTAGE EFFORT DEDICATED TO SPECIFIC RESPONSIBILITIES

The survey collected the self-reported break-up of "percentage effort" for each faculty's job description. Each female faculty provided the information on their typical designated percentage of work which was averaged out by rank. Instructors dedicated most of their time towards research and clinical responsibilities, with significantly lesser emphasis on teaching and service responsibilities. With an increase in the academic rank (assistant professor to professor), the percentage effort for research and teaching and clinical responsibilities decreased as compared to the instructors with a proportionate teaching and service responsibilities. In spite of

the increase in teaching and service responsibilities through the higher faculty ranks, research and clinical responsibilities were reported as the major responsibilities of women medical faculty across all ranks (Figure 9).

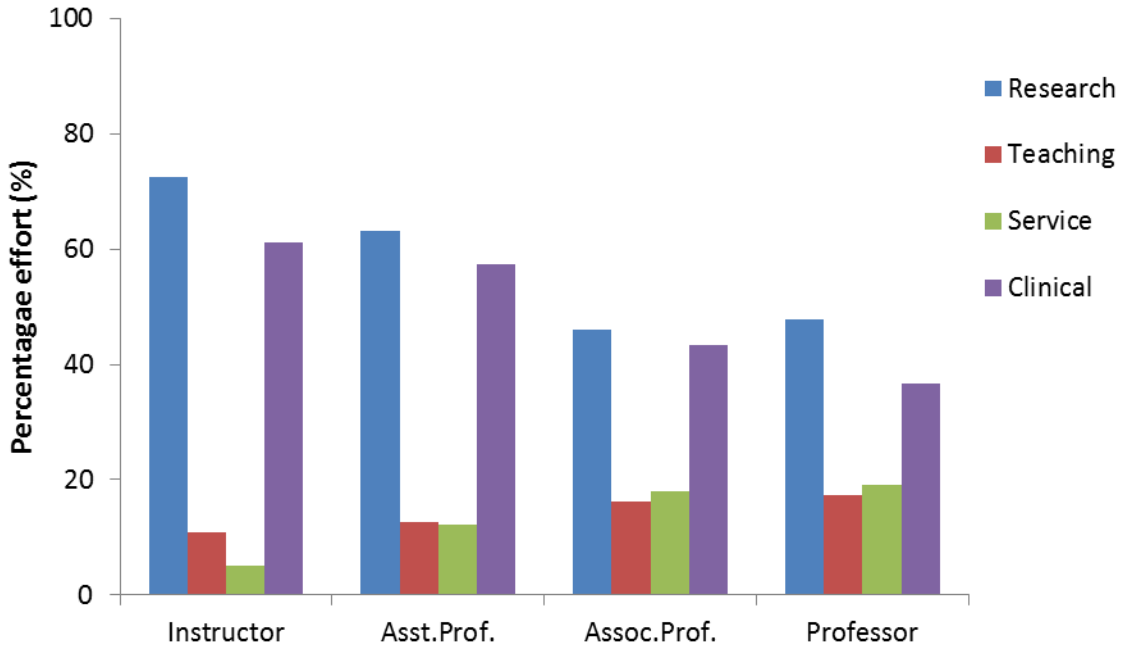


*Figure 9.* Effort spent by women faculty on research, teaching, service and clinical across the different faculty ranks.

## 4.3 SATISFACTION ANALYSIS

In this section, analyses of the various questions related to the conceptual framework have been discussed. Survey answers were recorded in the Likert scale of Very Dissatisfied, Dissatisfied, Neutral, Satisfied, and Very Satisfied. Although the survey answers were based on a 5-point rating scale, for the analysis within this study the answers were reclassified on a 3-point

scale; Very Dissatisfied and Dissatisfied were merged into one group called “Dissatisfied”; Satisfied and Very Satisfied were merged into another group called “Satisfied” whereas Neutral were retained as “Neutral”.

### 4.3.1 Environmental Factors

As discussed in the literature review, environmental factors are those factors that are related to external influences over which faculty may or may not have control. These include factors such as salary expectations, gender bias, mentorship experience, leadership influence, and faculty development.

#### 4.3.1.1 Salary

Although, salary was one of the more critical components of the survey, the question regarding salary was not a “forced-response” question. Although most of the survey participants responded to salary satisfaction with a 98% (272/279) response rate; there were seven participants who chose to not respond to this question.

Women faculty, as a whole, at the University of Pittsburgh, SOM seemed satisfied with their salary expectations. 47% (129/272) of the survey participants reported as being either satisfied or very satisfied with their salaries. In contrast, 31% (85/272) of the faculty were dissatisfied and 21% (58/272) had neutral sentiments regarding their salaries. Further breakup of these numbers among the academic ranks showed that instructors were evenly distributed across the satisfaction spectrum, with 4 (31%) reporting to be dissatisfied, 5 (38%) being neutral and 4 (31%) being satisfied with their salary. There was an increasing trend in the satisfaction scores

for salary expectations as faculty progressed through to higher academic ranks. Assistant professors reported slightly better satisfaction scores as compared to instructors, with 45 (34%) being dissatisfied, 29 (22%) neutral and 57 (44%) being satisfied with their salaries. The corresponding percentages for associate professors were 26 (35%) dissatisfied, 12 (16%) neutral and 37 (49%) being satisfied. The professors who responded to the survey seemed to be quite satisfied with their salary expectations with only 10 (19%) reporting as being dissatisfied, 12 (23%) being neutral, whereas over half of the professors who responded; 31 (59%), reported as being satisfied with the salary they were drawing (Figure 10).

Based on the responses of the participants regarding salary satisfaction, there appears to be a trend as far as salary satisfaction and academic rank is concerned. There is an increasing positive sentiment with increasing academic rank, and a greater proportion of professors seemingly satisfied with their salaries as compared to the lower ranks such as instructors and assistant professors. In spite of this apparent trend, the chi square analysis of the data showed that the difference in the satisfaction regarding salary expectations between faculty at different academic levels was not statistically significant (Chi square p-value 0.19). This lack of significance on the chi square test can be explained by the relatively similar percentages among the different faculty ranks who were either not satisfied or had neutral sentiments regarding their salary expectations.

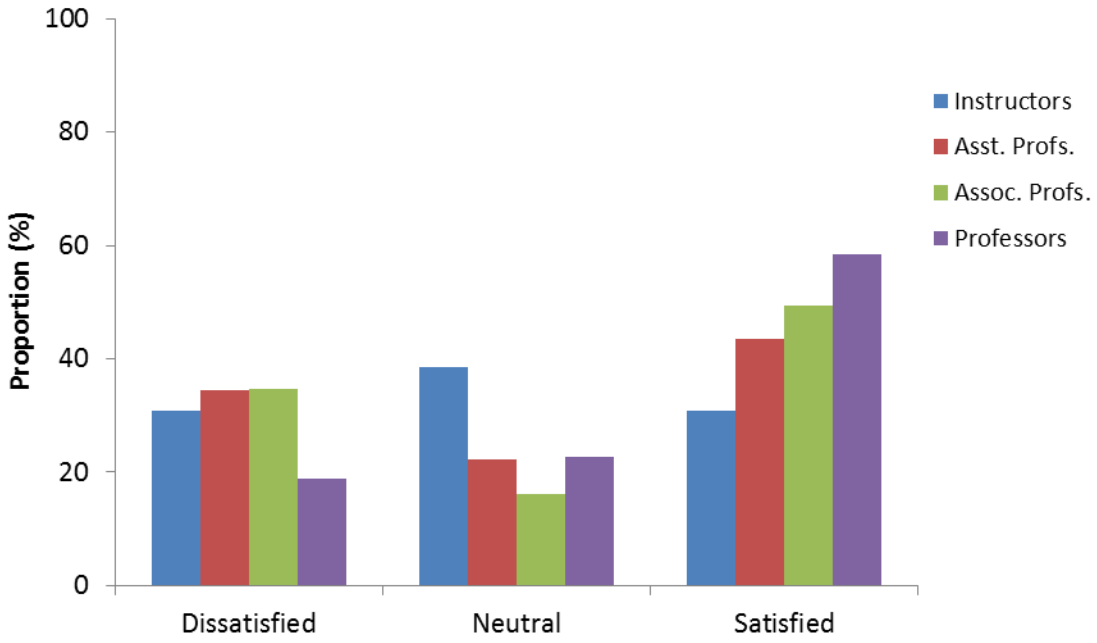


*Figure 10.* Satisfaction levels with respect to salary expectations of women faculty across the different faculty ranks.

On cross tabulating the tenure status of the women faculty versus their satisfaction with salary, it was seen that tenure status was not really related to their satisfaction levels. Faculty on the tenure-track reported being 33% (15/45) dissatisfied, 25% (11/45) being neutral, and 42% (19/45) being satisfied. Those that were tenured reported being 27% (14/52) dissatisfied, 12% (6/52) were neutral and 62% (32/52) were satisfied. Of the women faculty who were on contract, 32% (56/175) were dissatisfied, 23% (41/175) were neutral and 45% (78/175) were satisfied. Overall, the faculty seemed satisfied with their salary expectations.

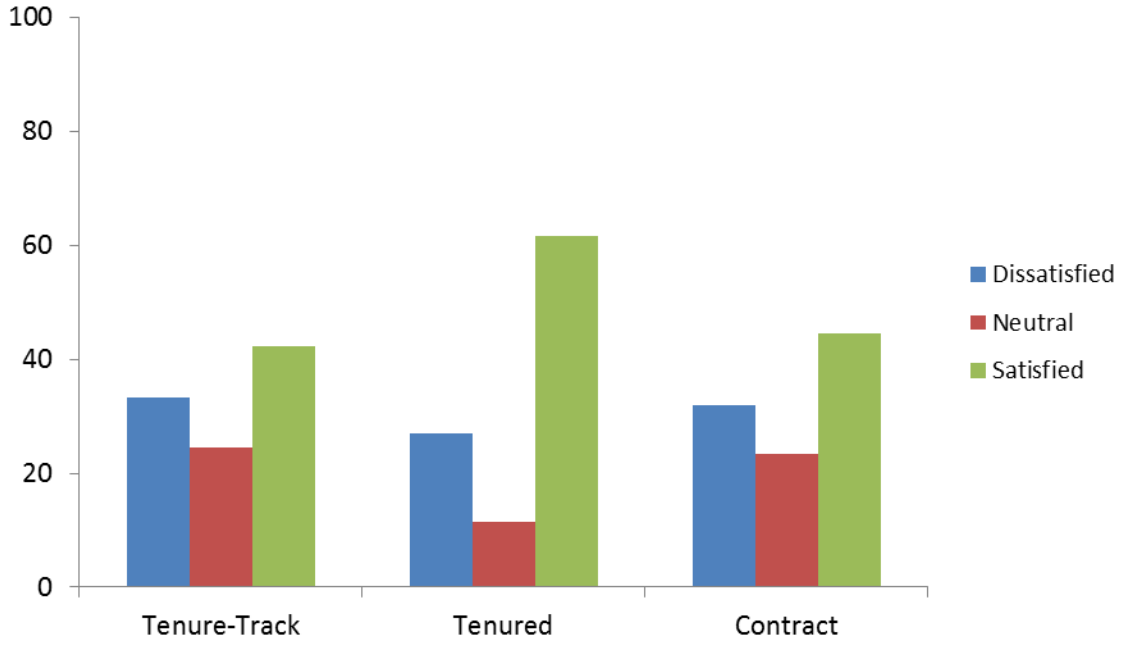


*Figure 11.* Satisfaction levels with respect to status, tenure-track/tenured/contract, of women faculty.

#### 4.3.1.2 Gender

This question addresses the question of gender bias, if at all present, in the various departments at SOM. It reflects the satisfaction towards the level of opportunities given to faculty regardless of their gender. Similar to the salary satisfaction question, the question regarding gender bias was not a "forced-response". As a result, 98% (272/279) women faculty responded to the question regarding the level of opportunities given to all faculty regardless of their gender.

The results showed that most women faculty were satisfied with the opportunities given to them by SOM with more than half of the respondents being satisfied with the prospects offered to them. The analysis per rank shows that 7 (54%) instructors, 67 (51%) of the assistant professors, 38 (51%) associate professors and 29 (55%) professors were satisfied. The remaining

ranks were evenly divided between being neutral and being dissatisfied (Figure 12). The chi square analysis of the data did not show any difference in the satisfaction regarding gender bias with respect to the academic rank (p-value 0.97).

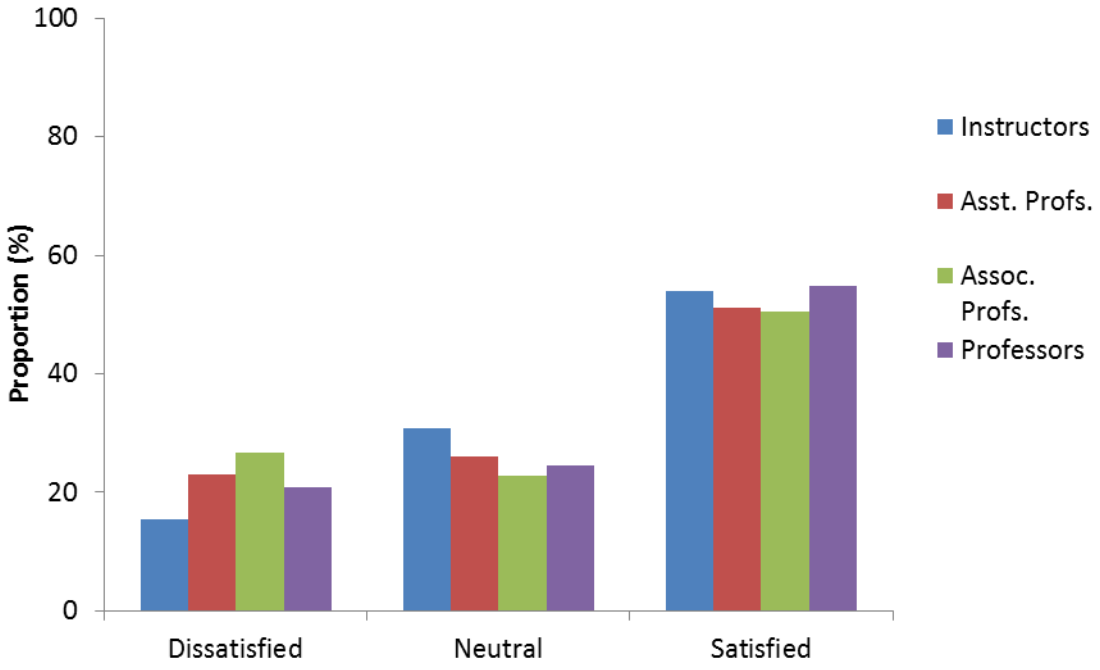


*Figure 12.* Satisfaction levels with respect to gender bias of women faculty across the different faculty ranks.

#### 4.3.1.3 Mentorship

Quality, quantity and personalized mentorship hold high value in academic culture, especially for junior faculty, for whom mentoring plays an important role in their career advancement. The survey captured satisfaction levels of women faculty regarding their mentoring experience at SOM. Each faculty who responded to this question was currently being mentored or had been mentored in the past.

The survey asked women faculty about their experience regarding formal and informal opportunities provided by the department and their satisfaction there of the 1) quality of

mentoring experience, and, 2) amount of personal interaction with tenured faculty. An individual analysis of the two questions, it appeared those junior women faculty were less satisfied than their senior colleagues. 31% of the instructors were dissatisfied as compared to 30% of assistant professors, 26% of associate professors and 19% of professors. Conversely, 31% of the instructors were satisfied as opposed to 48% of assistant professors, 57% of associate professors and 52% of professors (Figure 12). Although there appears to be a trend for greater dissatisfaction among junior faculty regarding their mentoring experience, the Chi-square analysis did not show a statistical difference ($p=0.05$) suggesting that mentoring satisfaction did not depend on the rank of the faculty.

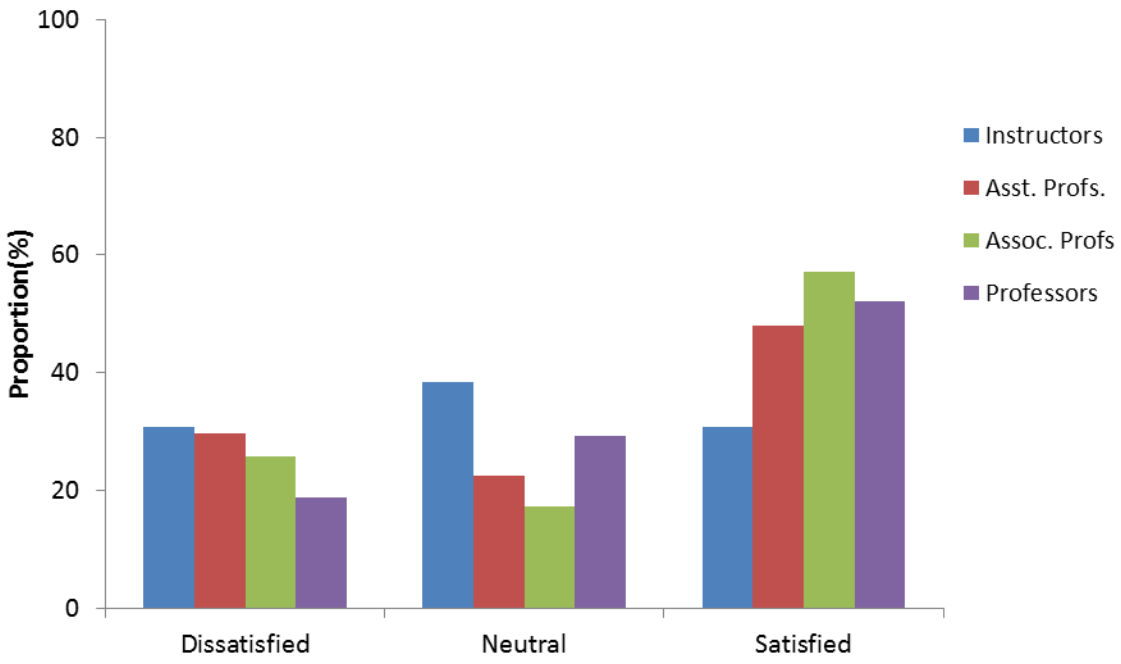


*Figure 13.* Satisfaction levels with respect to quality of mentoring available to women faculty across the different faculty ranks.

In contrast to the quality of mentoring, women medical faculty seemed to be highly satisfied with the amount of personal interaction they had with tenured faculty. 54% of the instructors and assistant professors, 57% of associate professors and 67% of professors reported as being satisfied with their interaction with fellow medical faculty. In contrast, eight percent of instructors, 12% of assistant and associate professors and eight percent of professors were dissatisfied (Figure 14). The data is reflective of the ranks and the seniority associated with it. In general, the higher ranked faculty such as professors and associate professor were the mentors whereas junior faculty such as instructors and assistant professors were the mentees.

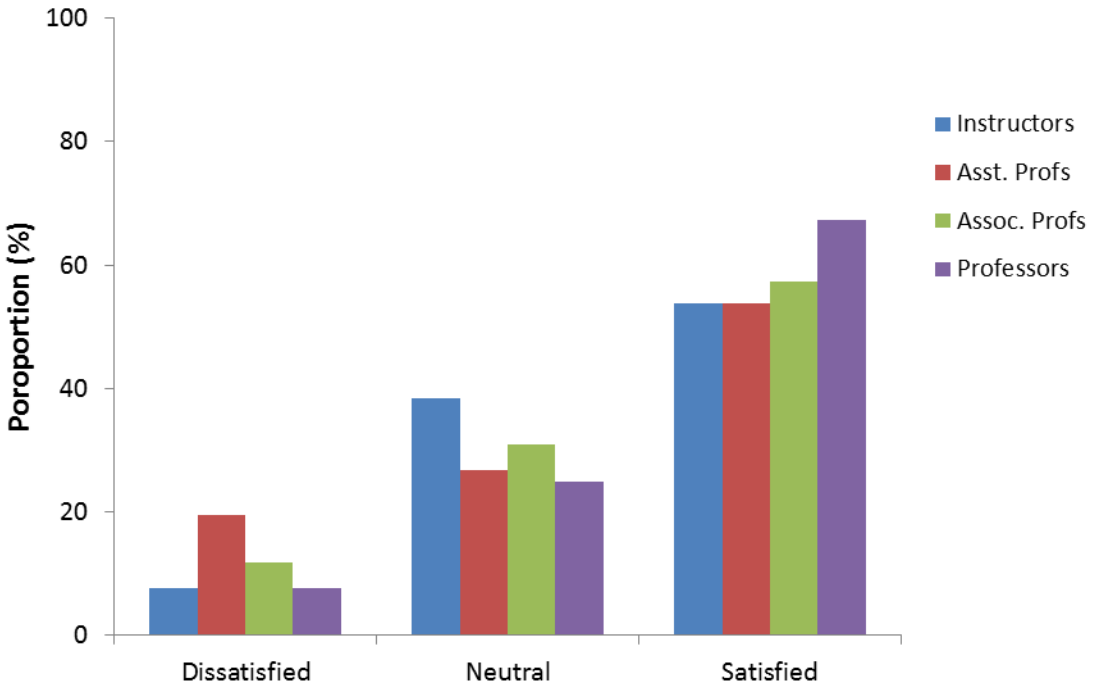


*Figure 14.* Satisfaction levels with respect to personal interaction between fellow women faculty across the different faculty ranks.

#### 4.3.1.4 Leadership

Literature shows that one of the factors that contribute towards attrition of women faculty from academic medicine is the lack of appropriate leadership in their respected departments. The questionnaire included an item wherein faculty was required to think about their work and rate their level of satisfaction with departmental leadership. A total of 270 women faculty responded to this question of which 66% of the respondents reported as being satisfied with their departmental leadership (Figure 10). 54% of the instructors, 61% of the assistant professors, 68% of the associate professors and 77% of the professors were satisfied by the leadership in their respective departments. Eight percent of instructors, 15% of assistant professors, 22% of associate professors, and 13% of professors reported as being dissatisfied with the department leadership (Figure 15). The chi square analysis of the data suggests that the difference in satisfaction levels regarding departmental leadership among the different faculty ranks was statistically significant (p-value 0.03).

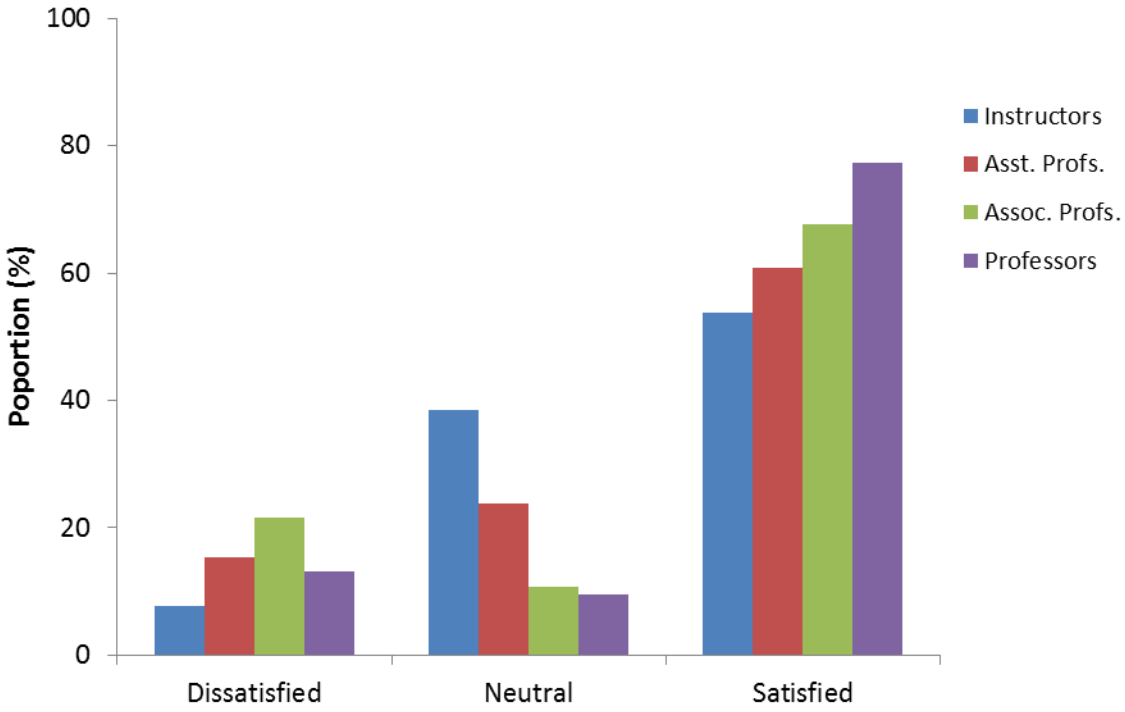


*Figure 15.* Satisfaction levels of women faculty across the different faculty ranks with respect to department leadership.

#### 4.3.1.5 Faculty Development

Every faculty needs guidance and development to succeed and advance in their career. Faculty development can be provided by the individual departments as collaboration opportunities with other faculty in the department, as well as opportunities provided by the medical school. The opportunities also depend on the pace at which the faculty is advancing. The questionnaire captured the satisfaction of women faculty with their career advancement and promotion possibilities at the school of medicine. There were a total of five items in the questionnaire that encompassed faculty development 1) opportunities by the department to collaborate with other faculty members of the department, 2) pace of faculty's professional

advancement at SOM, 3) prospects for career advancement, 4) opportunities for professional development provided by SOM, 5) recognition given by the Chair for exemplary work.

**Opportunities provided by department to collaborate with other members of the department**. As a whole, most of the women medical faculty had a high level of satisfaction with as far as collaborative opportunities provided at the departmental level across all the faculty ranks. The survey showed that 69% of instructors, 68% of assistant professors, 64% of associate professors and 79% of professors were satisfied with the opportunities provide to them by their respective departments (Figure 16). The chi square analysis of the data suggests that the difference in the satisfaction reported by the different faculty ranks regarding collaborative opportunities was statistically not significant (p-value = 0.53).

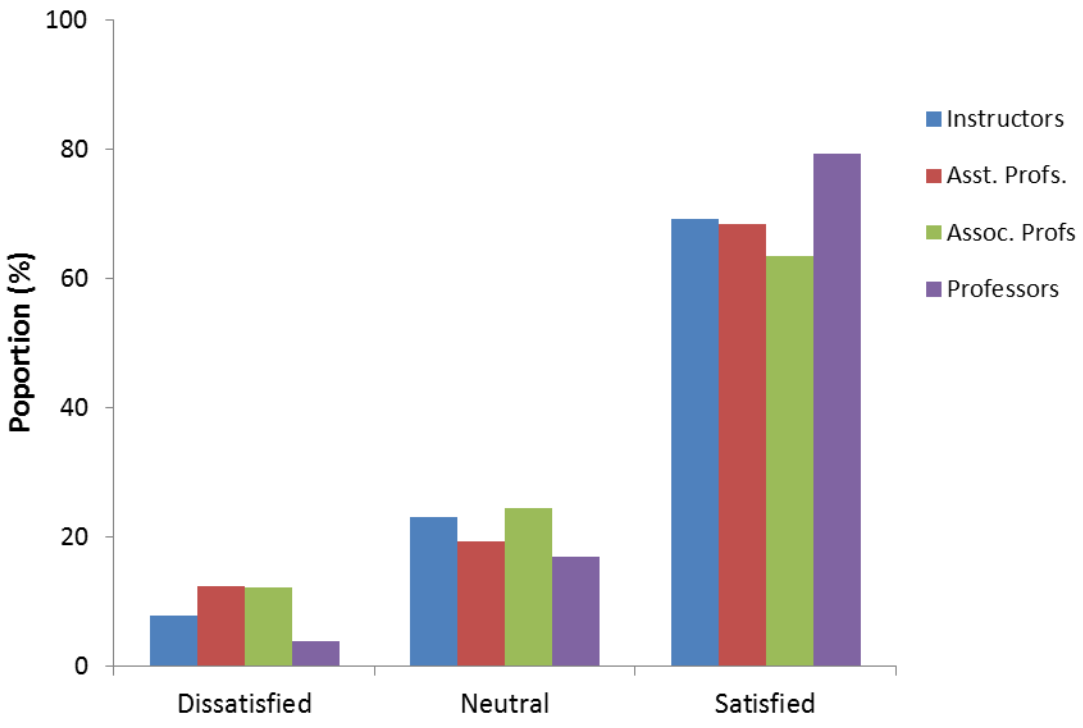


*Figure 16.* Satisfaction levels of women faculty across the different faculty ranks regarding opportunities provided by department to collaborate with fellow faculty members.

**Pace of professional advancement**. With respect to the pace of faculty advancement the response showed differences across the faculty ranks. On the 5-point Likert Scale, instructors averaged below the neutral category, the mean value being 2.75 (3 indicates neutral) indicating that, as a whole, instructors were dissatisfied with their pace of professional development. Assistant and associate professors averaged as being neutral (3.11 and 3.03 respectively) whereas professors were closer to being satisfied (3.75) with their progress of professional advancement (Figure 17).

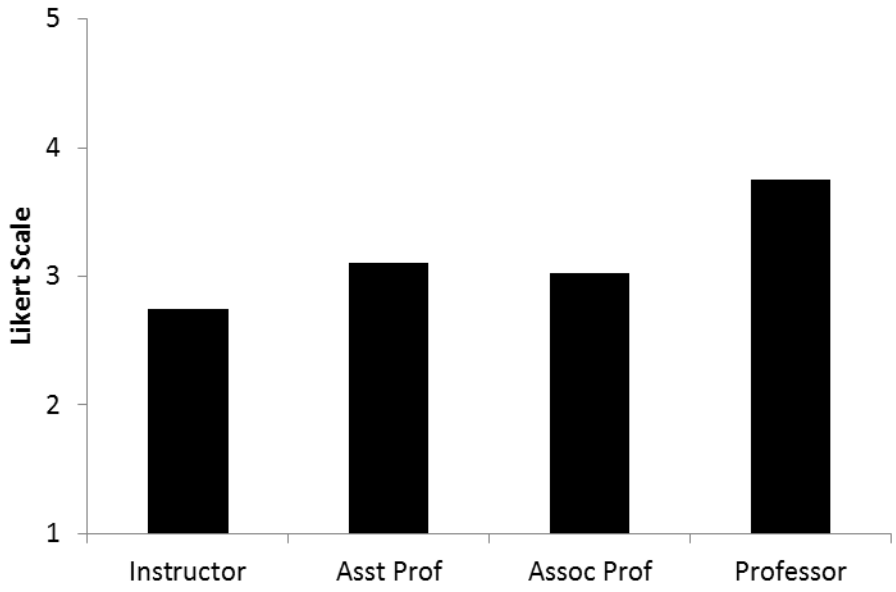


*Figure 17.* Likert satisfaction scale (1-5) of women faculty across the different faculty ranks regarding the pace of professional advancement.

Upon further analysis of the faculty responses, none of instructors reported as being satisfied with the pace of their professional advancement; 75% of the Instructors reported as being neutral whereas 25% were dissatisfied with the pace of their professional advancement. 31% of the assistant professors were satisfied, whereas 41% were neutral and 28% were

dissatisfied. The satisfaction rate appears be increasing as the ranks move up; associate professor where 39% of the associate professors reported as being satisfied and 67% of professors were satisfied with the pace of the professional advancement. Only a small proportion (12%) of professors indicated as being dissatisfied with the pace of pace of professional advancement at the Univ. of Pittsburgh SOM (Figure 18). Chi square analysis of the data showed that the difference in the satisfaction scores regarding the pace of professional advancement across the different faculty ranks was statistically significant (p-value < 0.05).

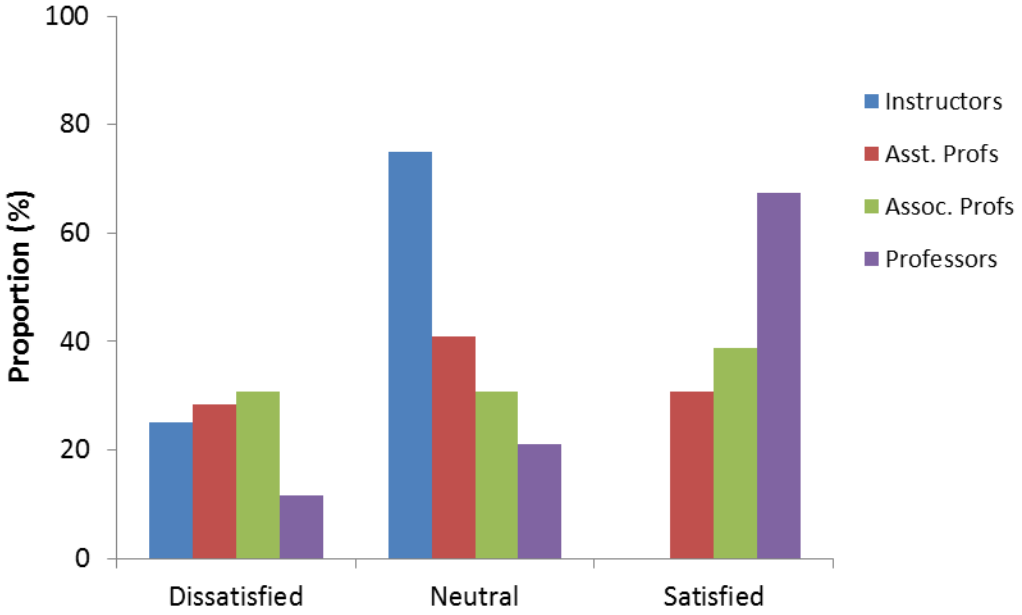


*Figure 18.* Satisfaction levels of women faculty across the different faculty ranks regarding the pace of professional advancement.

**Prospects for career advancement**. Although quite similar to the pace of professional advancement, prospects for career advancement are also an important factor in a faculty's professional development. This factor has a subtle difference from the pace of professional advancement, so much so that the projected path of progress when known to faculty provides

incentive for the faculty to stay as opposed to the speed at which a faculty progresses to higher ranks. However, similar to the previous section, the 5-point Likert Scale showed that instructors were less than neutral towards the prospects for career advancement (2.77). Assistant, associate professors and professors were slightly above the neutral mark (3.08, 3.02 and 3.46 respectively) (Figure 19). It was surprising to note that, considering they are at the top of the faculty rank and tenure, professors did not share a very optimistic sentiment as compared to their junior colleagues. Though the Likert Scale average for professors was higher than the junior ranks, it was not as high as one would expect considering obtaining a full professorship is the ultimate career goal of every faculty in academia.

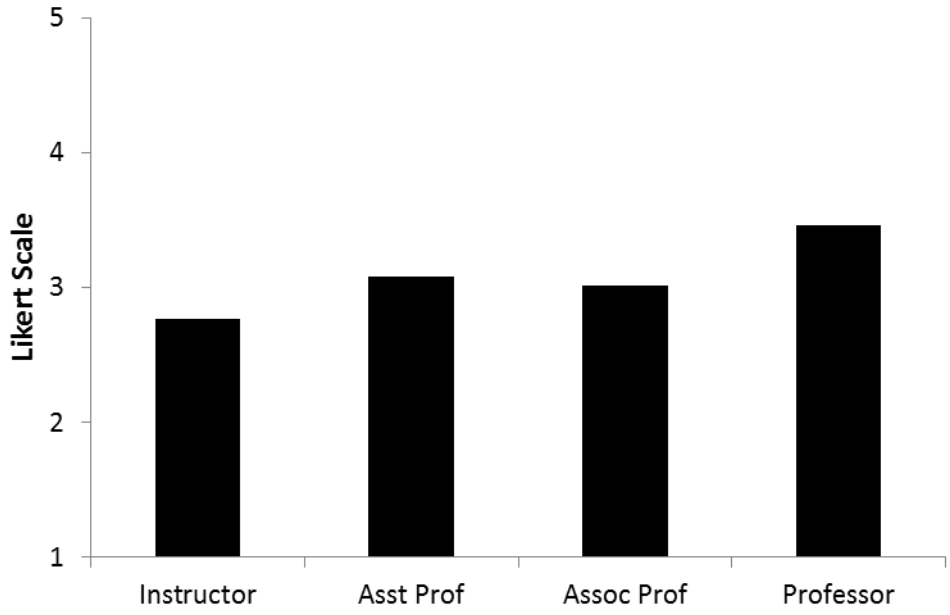


*Figure 19.* Likert satisfaction scale (1-5) of women faculty across the different faculty ranks regarding the prospects for advancement.

However, on further breakdown of the proportion of responses, the data showed that while only 15% of the instructors reported as being satisfied with their future prospects, there

was an increasing trend with the rise in the faculty ranks. 32% of the assistant professors, 39% of the associate professors and 54% of professors reported as being satisfied with their prospects of career advancement. Conversely, the higher faculty ranks scored as equal as or lower than their junior ranks as far as dissatisfied or neutral response was concerned (Figure 20). Chi square analysis of the data showed that the difference in the satisfaction scores regarding prospects of professional advancement across the different faculty ranks was statistically significant (p-value = 0.05).

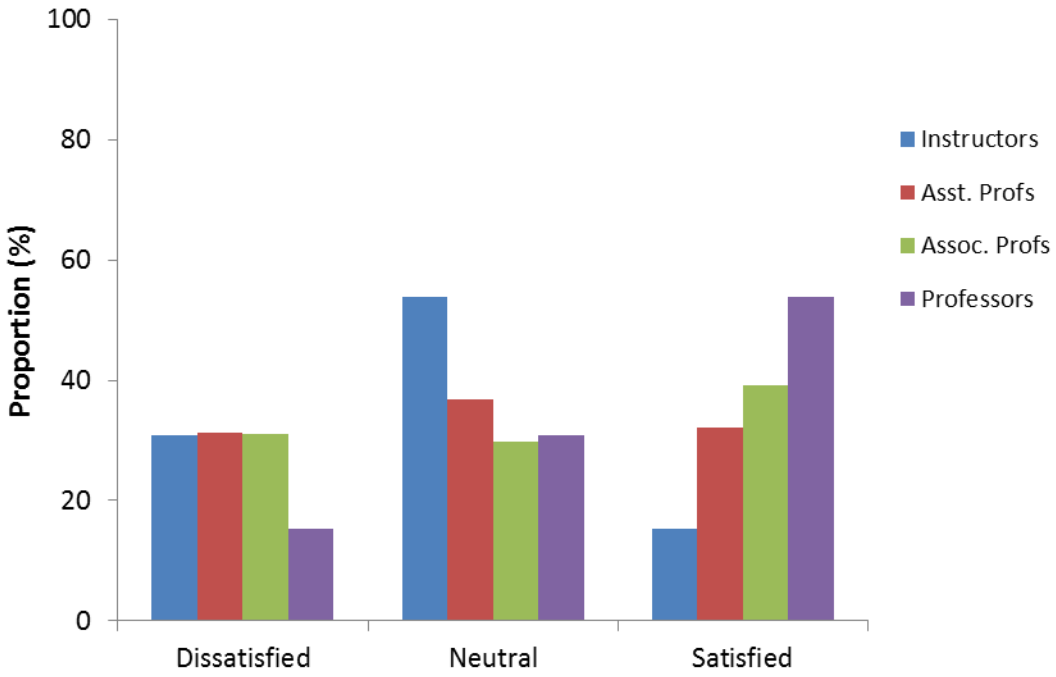


*Figure 20.* Satisfaction levels of women faculty across the different faculty ranks regarding the prospects for career advancement.

**Opportunities for professional development**. While being very similar to the previous two categories, the opportunities for professional development presents as a distinct entity in comparison to either the pace or the prospects for career advancement. As a whole, women

faculty seemed to be satisfied with the opportunities for professional development that were available to them at the SOM. Approximately half the survey respondents (49%) reported as being satisfied with the opportunities that were provided to them for professional development. Contrary to the pace or the prospects for career advancement, junior faculty reported to be fairly satisfied with the opportunities for professional development. 38% of the instructors and 45% of the assistant professors reported as being satisfied. Slight higher proportion of senior faculty responded as being satisfied with 47% of the associate professors and 68% of the professors being satisfied by the opportunities provided for professional advancement by the SOM (Figure 21).

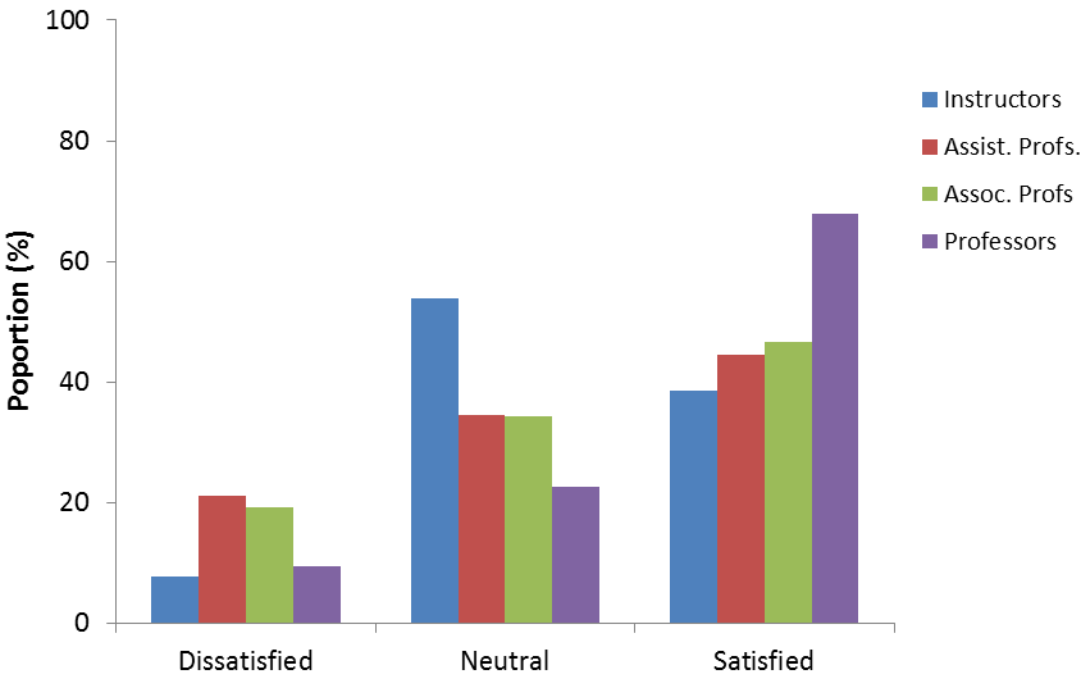


*Figure 21.* Satisfaction levels of women faculty across the different faculty ranks regarding opportunities for professional development.

A comment posted on this specific topic by one of the participants was very positive about the opportunities provided to younger faculty. It read “My division/department has excellent (intellectual) resources devoted to development of early academic careers in clinical investigation, and my mentors across the institution -- including those from other departments -- have been amazing”. The participant, however, did go on to mention that this support had dwindled as the she had progressed in her career. She said “However, I now feel “stalled” in mid-career and don't feel like I'm served in the same way by my research mentors as I struggle to think about the next steps, nor does my department have any organized efforts to support/retain mid-career faculty”.

The Office of Academic and Career Development (OACD), University of Pittsburgh, offers professional development forums, courses and seminars, some of which are geared specifically towards women and junior faculty. The next set of data focusses on whether women medical faculty was aware of professional development programs being offered by the OACD at the University of Pittsburgh. Specifically, the survey asked whether women faculty were aware about the three courses offered by the OACD; women in medicine and science forum, sunrise series, and courses in scientific management and leadership (University of Pittsburgh Office of Academic Career Development, 2014a, 2014b, 2014c). A large percentage of women faculty (76%) expressed knowledge of the three programs being offered for professional development. As far as the specific courses were concerned, 80% of survey participants were aware of the women in medicine and science forum; 79% were aware of the sunrise series; and 70% knew about scientific management and leadership courses. Interestingly, the data showed that there was an increasing awareness among senior women faculty regarding these professional development opportunities as compared to their junior colleagues, given the fact that these

courses are specifically geared towards junior women faculty. While over 80% of the associate professors and professors were aware of the above-mentioned professional development course, 72% of the assistant professors and 61% of the instructors were aware of the 3 professional development courses (Figure 22).

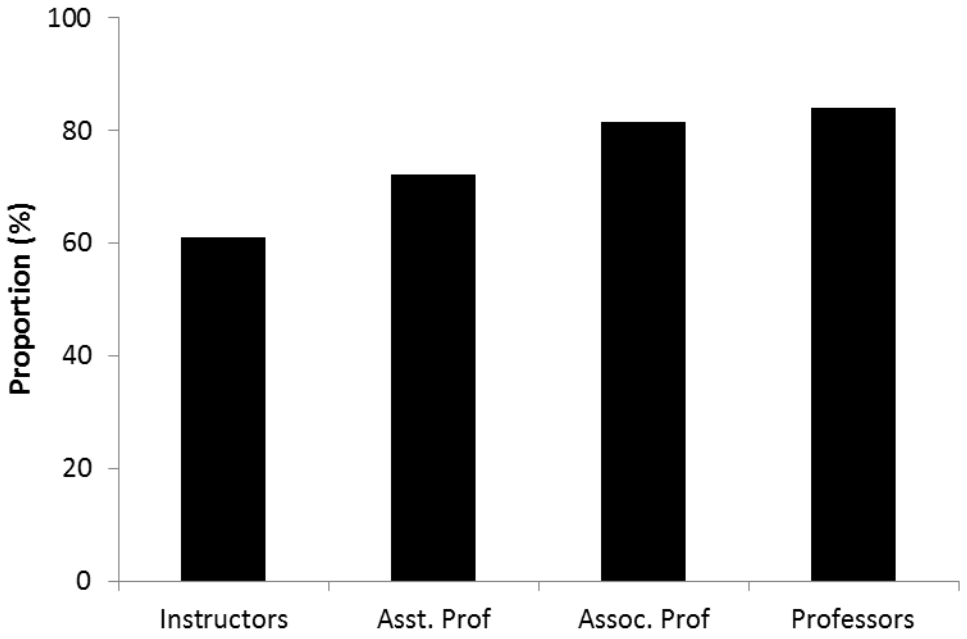


*Figure 22.* Proportion of women faculty that were aware of professional development courses available at the University of Pittsburgh across the various ranks.

**Recognition given by the department the chair for exemplary work**. Being recognized by the department chair plays a very important role in sustaining the motivation of faculty members in any setting. This is more relevant for junior women faculty who seem to be more involved in their work when their efforts do not go unnoticed and their work is either acknowledged or recognized by the department chair, individually or among fellow colleagues. When asked about the level of satisfaction regarding the recognition of their work by the department chair, 41% of the respondents reported as being satisfied with the recognition

provided by the department chair. However an equal proportion of respondents (41%) reported as being neutral while 18% were dissatisfied with the level of recognition offered by the department chair. Analysis of the responses based on the faculty ranks showed that, except for professors, less than half of the instructors (38%), assistant professors (34%) and associate professors (41%) reported as being satisfied with the recognition given to them for their efforts by the department chair. In contrast, 60% of professors were satisfied with the recognition given by the department chair for their efforts (Figure 23). In spite of the greater satisfaction of women professors regarding the recognition by the department chair, the chi square analysis of the data showed that the satisfaction levels for the recognition of efforts by the department chair did not differ significantly among the different faculty ranks (p-value >0.05).

Since a high number of responses fell within the neutral scale, further analysis of the data was performed by assigning ordinal values to the responses and calculating the mean per rank. The weighted average was calculated (Table 18), and the results obtained showed the range to be from 2.14 to 2.46, indicating a substantial number of faculty chose to be neutral about their satisfaction with the recognition given by the Chair of their respective departments.

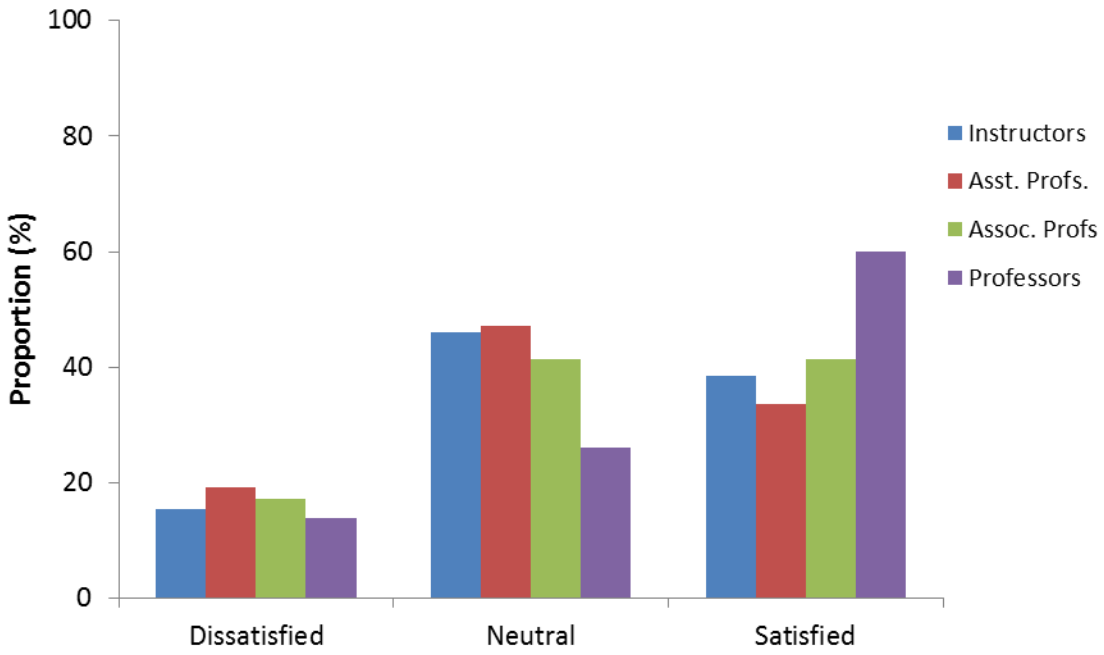


*Figure 23.* Satisfaction levels of women faculty across the different faculty ranks regarding recognition provided by the department chair for exemplary work.

### 4.3.2 Research Productivity

Securing research grants and publishing high quality research manuscripts, play a very important role for any academic faculty in a research-one university setting. High-volume of publications is encouraged, and the more the faculty publishes, the better the chances of getting funding for future projects. In addition to faculty pursuing their research interests, securing research grants applies a lot of pressure on faculty because a significant proportion of the salaries for some women faculty are directly derived from these research grants. When women faculty was surveyed regarding their satisfaction regarding research funding, faculty across all ranks responded unfavorably. On a Likert scale of 1-5 (1 being dissatisfied, 3 being neutral and 5 being

satisfied), all faculty ranks averaged below the neutral; instructors (2.55), assistant professors (2.52), associate professors (2.66) and professors (2.73) (Figure 24).

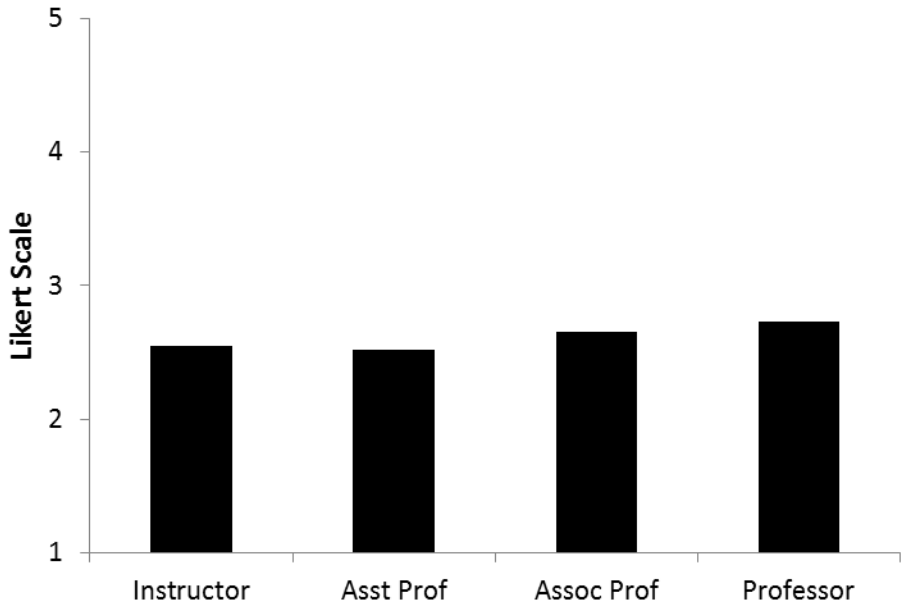


*Figure 24.* Likert satisfaction scale (1-5) of women faculty across the different faculty ranks regarding the pressure to obtain research funding.

On further breakdown of the responses go the question that captured the faculty's contentment on the pressure to find research funding, 46% of the responded were dissatisfied with the pressure to obtain research funding, and 33% of the total survey respondents were neutral whereas only 20% were satisfied with the pressure placed on them to obtain research funding (Figure 25). The proportion of survey participants that were dissatisfied with the pressure to secure research funding was significantly higher than the proportion of women faculty who responded as being neutral or satisfied (1-tail t-test p-value = 0.01 and 0.001

respectively). The proportion of participants that responded favorably as being satisfied with the pressure to secure research funding was significantly lower than even those that were indifferent/neutral (1-tail t-test p-value = 0.02).

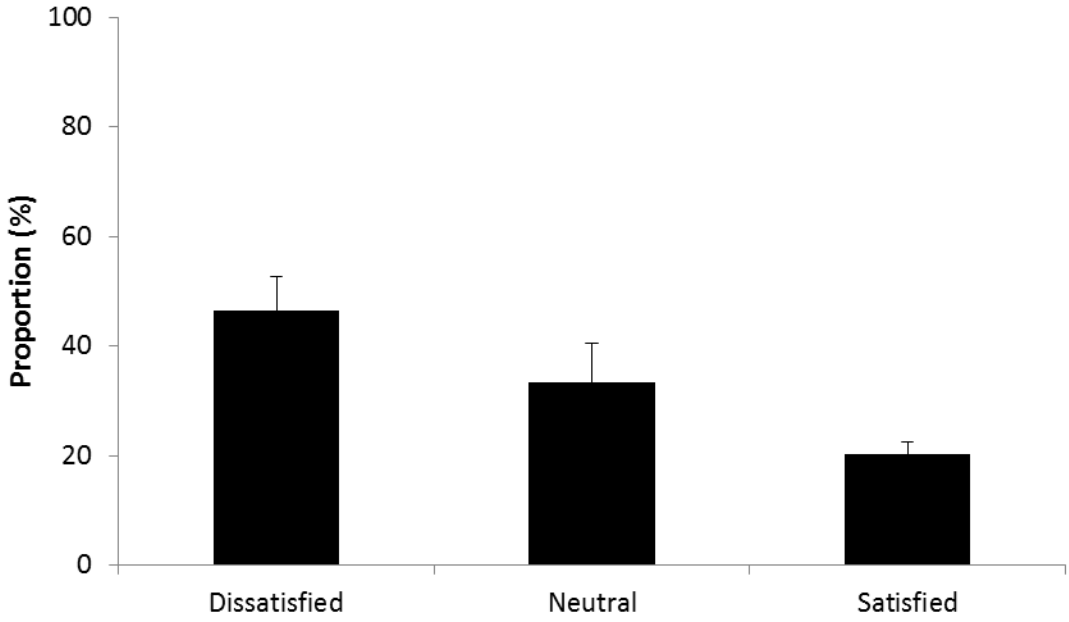


*Figure 25.* Satisfaction of women faculty as a whole regarding pressure placed on them by the University of Pittsburgh to obtain research funding.

The analysis of individual professoriate ranks shows that 56% of instructors, 44% of assistant professors, 53% of associate professors and 40% of professors were dissatisfied with the pressure placed on them to obtain research funding. This clearly indicates the pressure being felt by the faculty to perform in this area. In fact, only 18% of instructors, 22% of assistant professors, 21% of associate professors and 17% of professors seem to be satisfied with the pressure to obtain research funding (Figure 26). The chi square p-value test performed to check

for significance across the four ranks showed that satisfaction levels about the pressure to secure research funding did not differ significantly among the different faculty ranks (p-value = 0.61).

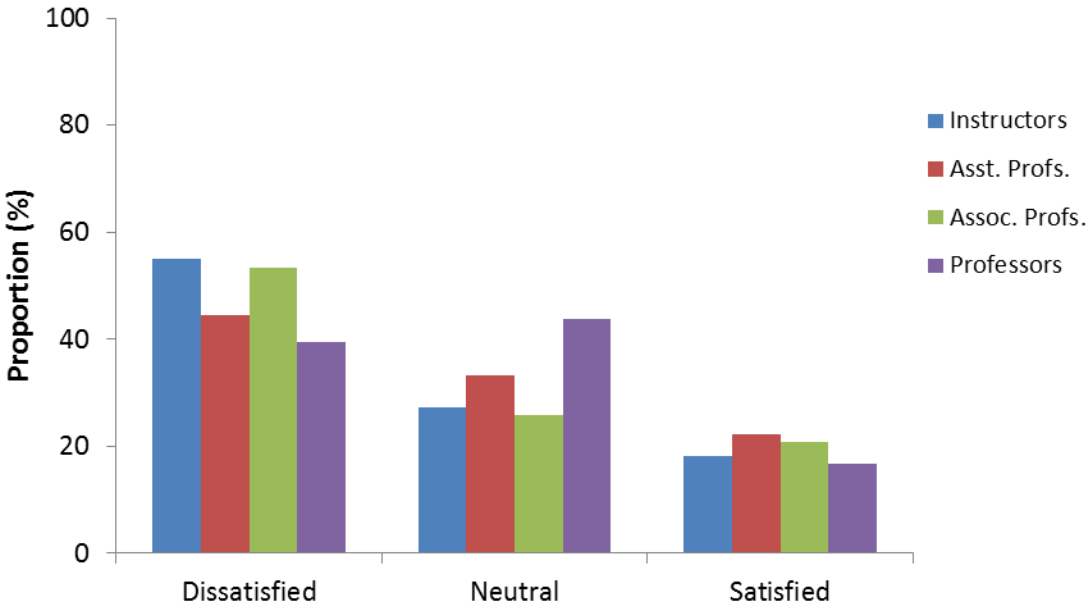


*Figure 26.* Satisfaction levels of women faculty across the different faculty ranks regarding pressure placed on them by the University of Pittsburgh to obtain research funding.

The tenure/contract status of the faculty was cross tabulated with the pressure to obtain research funding in order to examine whether tenure status was related to the satisfaction levels for this variable (Figure 27). Of the 207 women who responded to this question, 52% (23/44) of those who were untenured but on the tenure-track were dissatisfied, 34% (15/44) were neutral, and 14% (6/44) were satisfied. Among the tenured faculty, 46% (23/50) were dissatisfied, 26% (13/50) were neutral, and 28% (14/50) were satisfied. Among the women faculty on contract, 44% (50/113) were dissatisfied, 36% (41/113) were neutral, and 20% (22/113) were satisfied. The chi square p-value test performed to check for significance across appointment and tenure

status showed that relatively high dissatisfaction levels about the pressure to secure research funding did not differ significantly by faculty status (p-value >0.05).

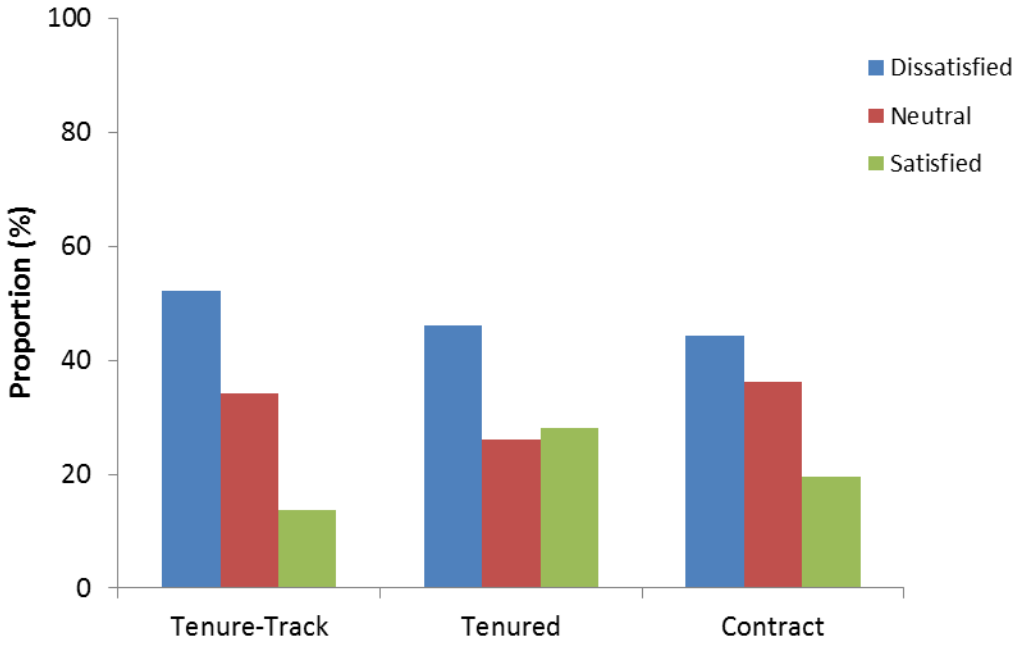


*Figure 27.* Satisfaction levels of women faculty across the different faculty status, tenure-track/tenured/contract regarding pressure placed on them by the University of Pittsburgh to obtain research funding.

In addition to the satisfaction choices that were provided, a few faculty specified additional comments regarding the pressure to obtain research funding. One faculty commented "Given limited research funding available now and in the immediate foreseeable future, it is difficult to recommend a career in academic medicine focused on basic or clinical research to young physicians". Another comment that was provided was "Given that funding is uncertain; departure may not be a choice but reality". Another comment was "The financial pressures are enormous and I am told regularly that job security is in peril and that there is no value placed on an institutional level for teaching. I must find funding for residency positions. I must find

funding for my residents' projects". Similarly, another participant commented "For the last 4 years, whenever I have my faculty evaluation, the only feeling I get is 'we (Univ. of Pittsburgh) do not care if you teach great, if you perform well, we only care about the money you bring in. And you (faculty) should bring in governmental grant, since these grants cover the overheads!!' An academic environment like this only pushes us away from the academic settings".

These comments echo the sentiments of the faculty throughout all ranks and match very well with the responses that were provided by the survey participants regarding the pressure on them to secure funding.

### 4.3.3 Internal Factors

#### 4.3.3.1 Work-life imbalance

For many working women faculty, striking a balance between domestic life and professional life is an important challenge. Many women faculty struggle with striking a balance between their work and personal life; which in turn negatively influences either one or the other. There are several ways that either the academic institution or the faculty herself can help create a balanced, well-functioning home and professional life for women faculty. Some of these measures include flexible working hours, support system for child care, tenure clock stoppage, and the woman's own ability to efficiently manage their time. The survey asked the participants about 1) flexible working hours; 2) support system available for childcare; 3) ability to balance professional and personal time; and 4) having children and tenure track compatibility.

**Flexible working hours.** 259 of the survey participants responded to the availability of flexible working hours at SOM. The consolidated results showed 72% of the women faculty were satisfied with the flexibility offered by SOM as far as their work was concerned. Further analysis showed high satisfaction rates across all the faculty ranks: 61% of instructors, 74% of assistant professors, 72% of associate professors and 71% of professors were satisfied with their flexible working hours (Figure 28).

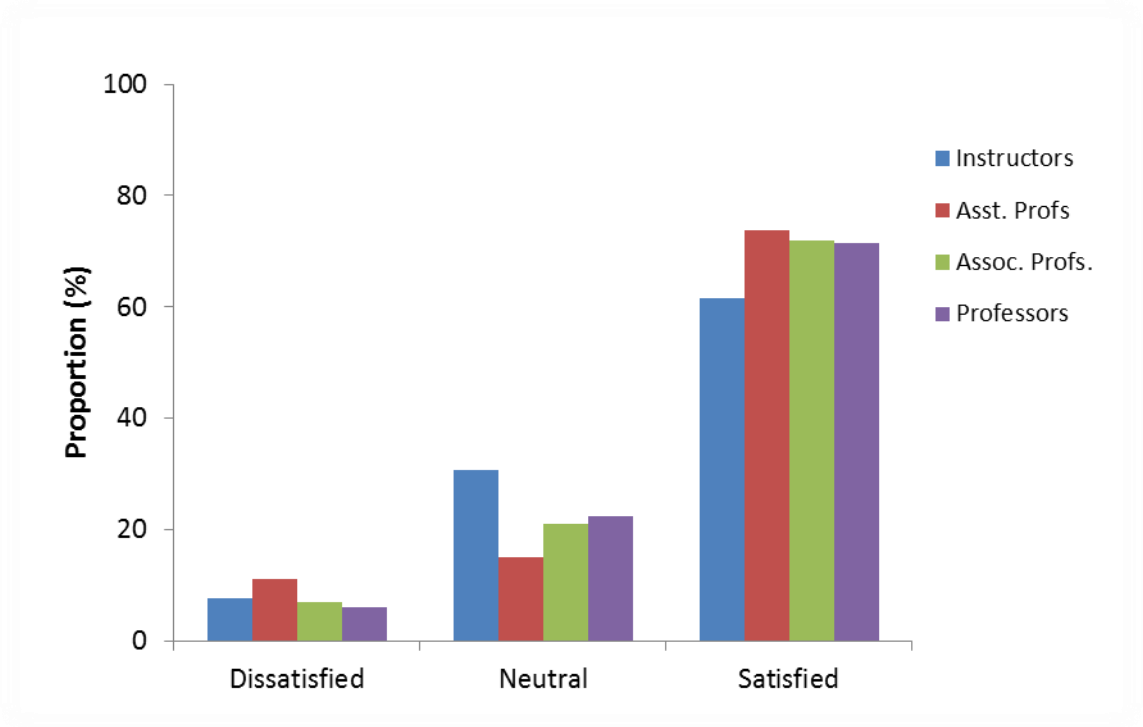


*Figure 28.* Satisfaction levels of women faculty across the different faculty ranks regarding their ability to have flexible working hours at the University of Pittsburgh.

**Availability of support system for childcare**. As opposed to flexible working hours for which women faculty seem to be rather satisfied, women medical faculty did not echo similar sentiments regarding the support systems in place for child care. Less than a quarter of the survey participants across each of the four faculty ranks were satisfied with the support systems

that were provided to them for child care. Only 17% of the instructors, 23% of assistant professors, 16% of associate professors and 25% of professors reported as being satisfied with the support system for child care at the University of Pittsburgh (Figure 29).

As a high number of responses fell within the neutral scale, further analysis of the data was performed by assigning ordinal values to the responses and calculating the mean per rank. The weighted average was calculated (Table 18), and the results obtained showed the range to be from 1.77 to 1.88 indicating faculty tended to be dissatisfied with the support system for child care.

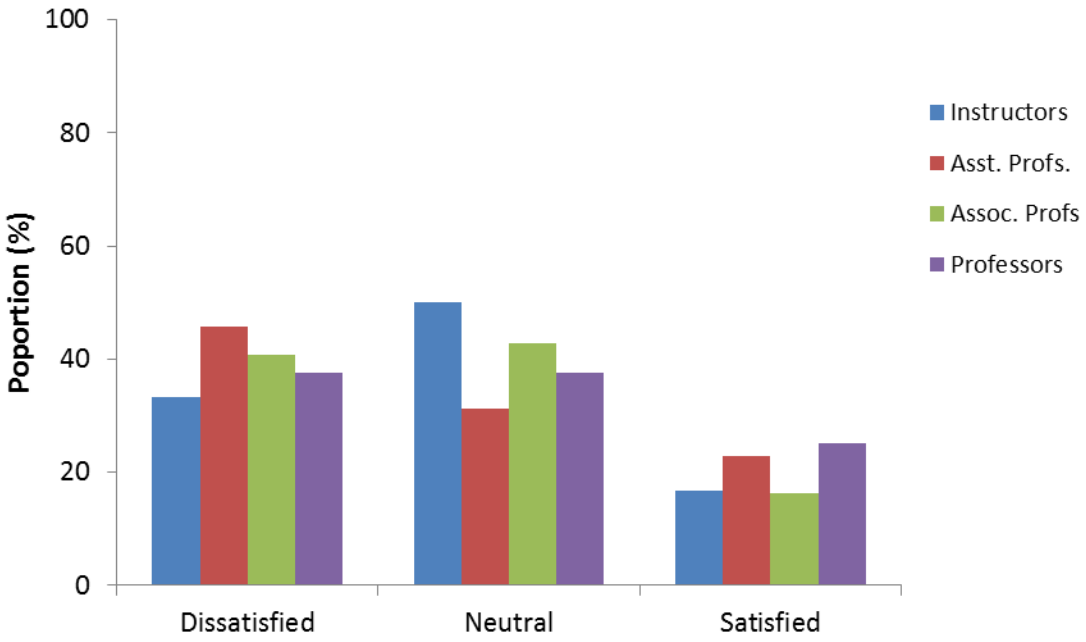


*Figure 29.* Satisfaction levels of women faculty across the different faculty ranks regarding availability of a support system for child care at the University of Pittsburgh.

**Ability to balance professional and personal time**. 266 women responded to the question regarding the internal ability of women faculty to be able to balance their professional and personal time. 17 % of instructors, 26% of assistant professors and 16% of professors report dissatisfaction with their ability to balance professional and personal time. Interestingly, a slightly higher proportion of associate professors (36%) were dissatisfied with their ability to balance professional and personal time as compared to the remaining three faculty ranks (Figure 30).

As a high number of responses fell within the neutral scale, further analysis of the data was performed by assigning ordinal values to the responses and calculating the mean per rank. The weighted average was calculated (Table 18), and the results obtained showed the range to be from 1.99 to 2.35 indicating a tendency of faculty to choose to be neutral about their satisfaction with their ability to balance professional and personal time.

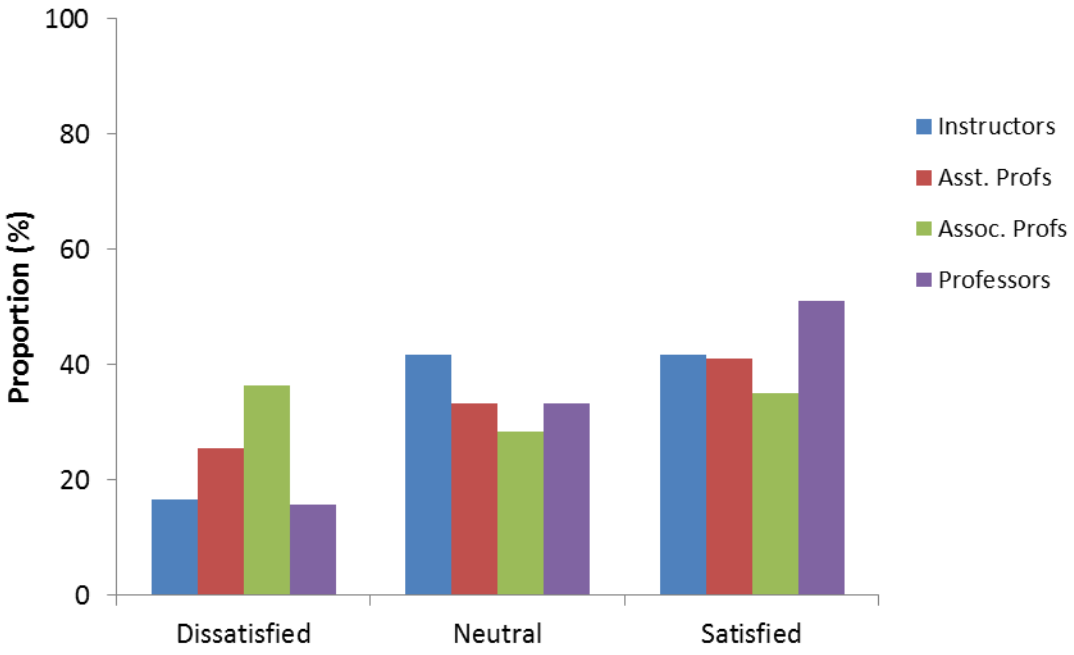


*Figure 30.* Satisfaction levels of women faculty across the different faculty ranks with respect to their ability to balance professional and personal time.

**Having children and tenure track compatibility**. Women faculty who are of child bearing age go through a highly stressful period of their life where their familial obligations and professional responsibilities overlap. Many institutions do take this into account and make provisions for women faculty to deal with such situations. The University of Pittsburgh allows tenure-track faculty who are new mothers one extra year (per child) to help build their portfolio (University of Pittsburgh Office of Faculty Affairs, 2008). With regards to such provisions women faculty were surveyed in order to measure their satisfaction levels towards these facilities provided to them by the University of Pittsburgh. Based on the 279 survey responses, 218 participants specified that they had children. However, only 132 of the participants answered the question regarding their satisfaction with having to raise children and tenure-track compatibility.

There was no clear trend seen among the instructor level as an equal proportion (33%) of the instructors were dissatisfied, neutral or satisfied. Half (50%) of the assistant professors were dissatisfied, whereas about a quarter of assistant professors were satisfied (26%) or were neutral (24%) towards the feeling about raising a family and being able to keep up with the tenure-track commitments. This high proportion of 'dissatisfied' assistant professors could be due to the fact that these are generally young faculty having young children, and at the same time, are in the initial stage of their professional career, which adds extra pressure on them. While this same distribution would be expected for associate professors, interestingly, there wasn't a big difference in the proportion of dissatisfied (36%), neutral (38%) and satisfied (24%) responses. Of the 54 professors, 33 of the professors who had tenure and all of these tenured professors answered the question. Since the question was relevant only to tenure-track compatibility, none of the contract-based professors attempted the question. 30% of the tenured professors reported as being dissatisfied, whereas 27% were neutral and 42% were satisfied. There appears to be a trend where the dissatisfaction among women faculty decreased as the faculty progressed through the ranks (Figure 31).

As a high number of responses fell within the neutral scale, further analysis of the data was performed by assigning ordinal values to the responses and calculating the mean per rank. The weighted average was calculated (Table 18), and the results obtained showed the range to be from 1.76 for assistant professors and 1.90 for associate professors to 2.00 for instructors and 2.12 for professors. This indicates that half of the faculty were dissatisfied and the other half were neutral about their satisfaction regarding responsibilities to children and its compatibility with the tenure-track process.

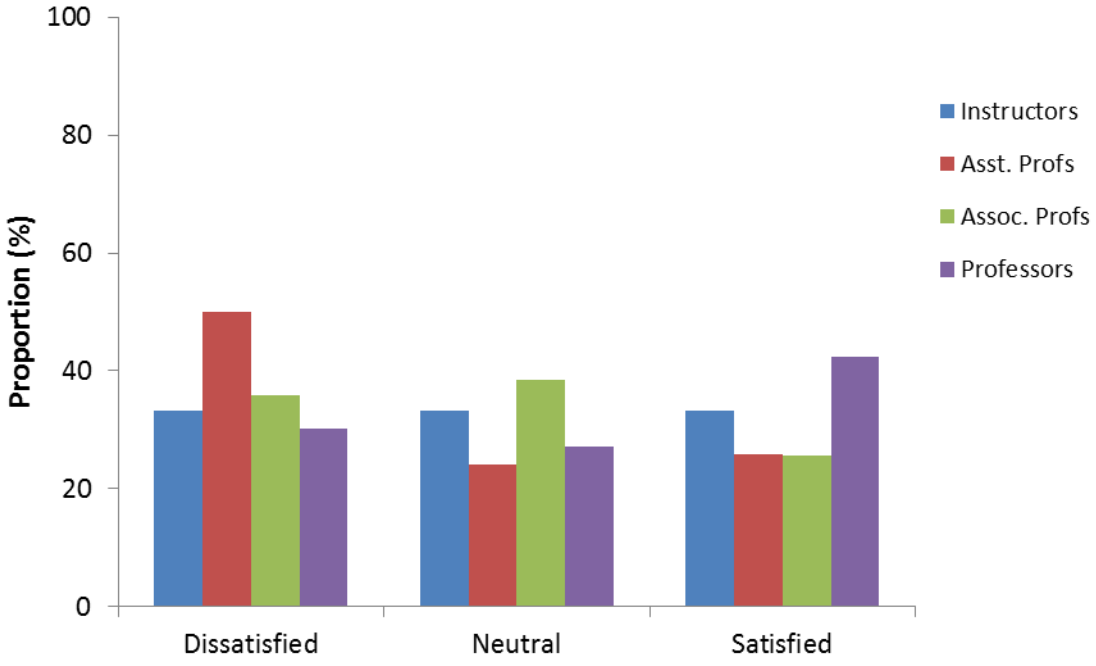


*Figure 31.* Satisfaction levels of women faculty across the different faculty ranks regarding responsibilities to children and its compatibility with the tenure-track process.

*Table 18.* Weighted averages for the satisfaction across different faculty ranks for work-life balance (support system for child care, balancing professional and personal time, and children responsibility and tenure track process); and faculty development (recognition given by the Chair for exemplary work).

| | Instructors | Asst. Professors | Assoc. Professors | Professors |
|---|---|---|---|---|
| **Work-life Imbalance** | | | | |
| Support system for childcare | 1.83 | 1.77 | 1.76 | 1.88 |
| Balance professional and personal time | 2.25 | 2.16 | 1.99 | 2.35 |
| Children responsibilities and tenure-track process | 2.00 | 1.76 | 1.90 | 2.12 |
| **Faculty development** | | | | |
| Recognition given by the Chair for exemplary work | 2.23 | 2.14 | 2.24 | 2.46 |

## 4.4 FACTORS CAUSING PROBABLE ATTRITION OF WOMEN FACULTY

### 4.4.1 Job Satisfaction

The survey asked participants about their overall satisfaction with their job. Although this question was not a forced response, a large number of survey participants (97%) responded to

this question. As a group, 63% (171/271) of the women faculty responded that they were satisfied with their job at the University of Pittsburgh, SOM. There appeared to be a trend wherein the proportion of faculty who were satisfied with their job increased with the seniority in the faculty rank. While only 38% of instructors reported as being satisfied with their job, 60% of assistant professors, 61% of associate professors and 79% of professors reported as being satisfied with their jobs. A significant proportion of instructors (54%) were indifferent towards their job and reported as being neutral (Figure 32). The chi square analysis of the data suggests that the difference in the faculty's satisfaction levels differed significantly among the different faculty ranks (p-value < 0.05) with higher satisfaction scores in senior faculty as opposed to junior faculty.

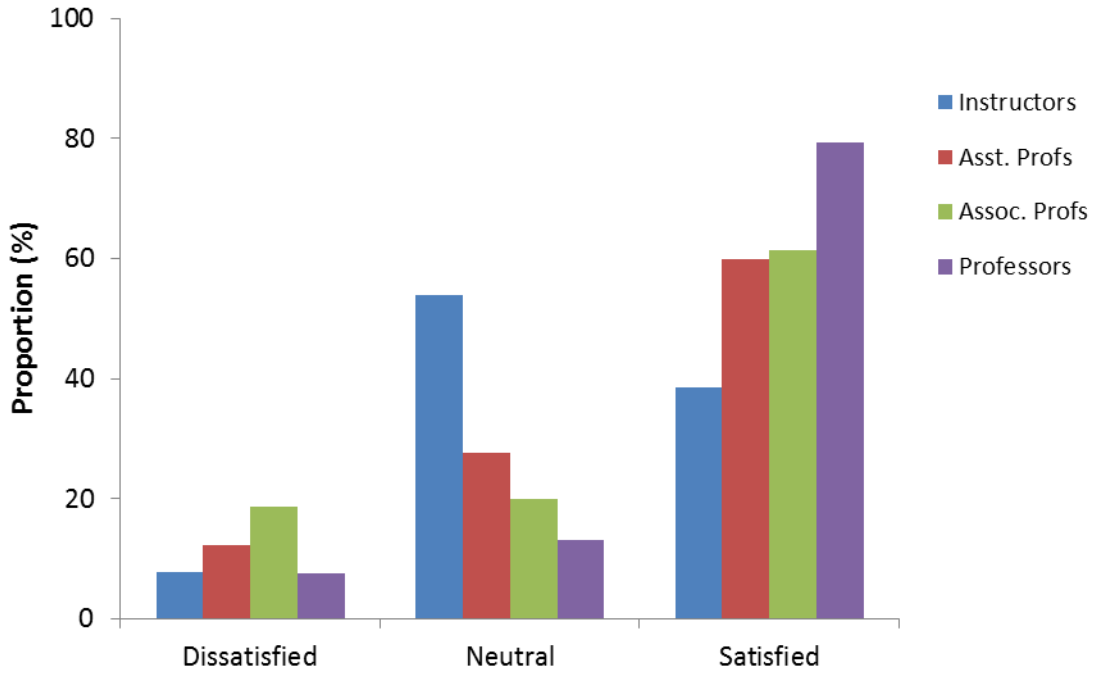


*Figure 32.* Overall job satisfaction of women faculty at the University of Pittsburgh across the different faculty ranks.

The status, tenure-track, tenured or on contract, of the women faculty was also analyzed with respect to their job satisfaction. The women faculty seemed highly satisfied with their job and the University of Pittsburgh. Those on tenure-track 20% (9/45) were dissatisfied, 24% (11/45) were neutral, and 56% (25/45) were satisfied. The tenured faculty group was divided into 12% (6/52) being dissatisfied, 13% (7/52) were neutral, and 75% (39/52) were satisfied. Those on contract were 12% (20/174) dissatisfied, 27% (47/174) neutral, and 62% (107/174) were satisfied. The chi square p-value test performed to check for significance across the status showed that dissatisfaction levels about the job satisfaction did not differ significantly by faculty status (p-value >0.05).

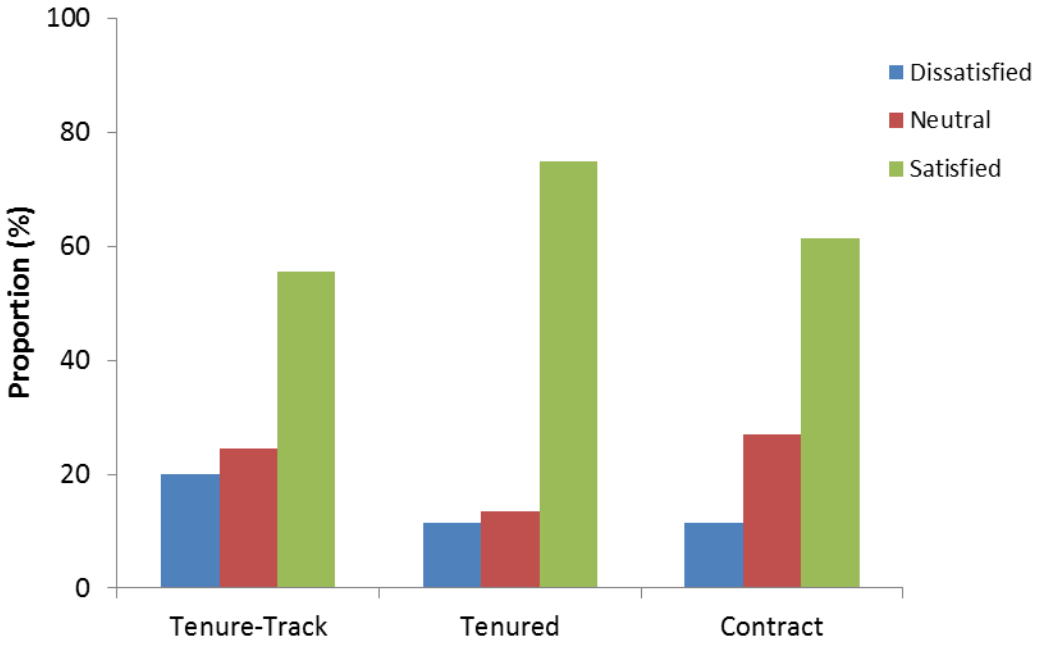


*Figure 33.* Overall job satisfaction of women faculty at the University of Pittsburgh across the different status, tenure-track/tenure/contract, of women faculty.

Satisfaction levels were analyzed according to the highest degree, focusing on those women faculty who had an MD; MD and PhD; and PhD. Those who had other degrees like MD and MS; MD and MPH; DO, etc., were not included in the analysis as it would make them easily identifiable. The women faculty with only MD degrees were a total of 138, out of which 12% (16/138) were dissatisfied, 23% (32/138) were neutral, and 65% (90/138) were satisfied with their job at the University of Pittsburgh. There were 18 faculty members with MD and PhD, 11% (2/18) were dissatisfied, 28% (5/18) were neutral, and 61% (11/18) were satisfied. One hundred and three women faculty respondents held only PhDs, out of which 14% (14/103) were dissatisfied, 24% (25/103) were neutral, and 62% (64/103) were satisfied with their job at the University of Pittsburgh. The trend shows no significant difference between highest degree held and levels of job satisfaction.

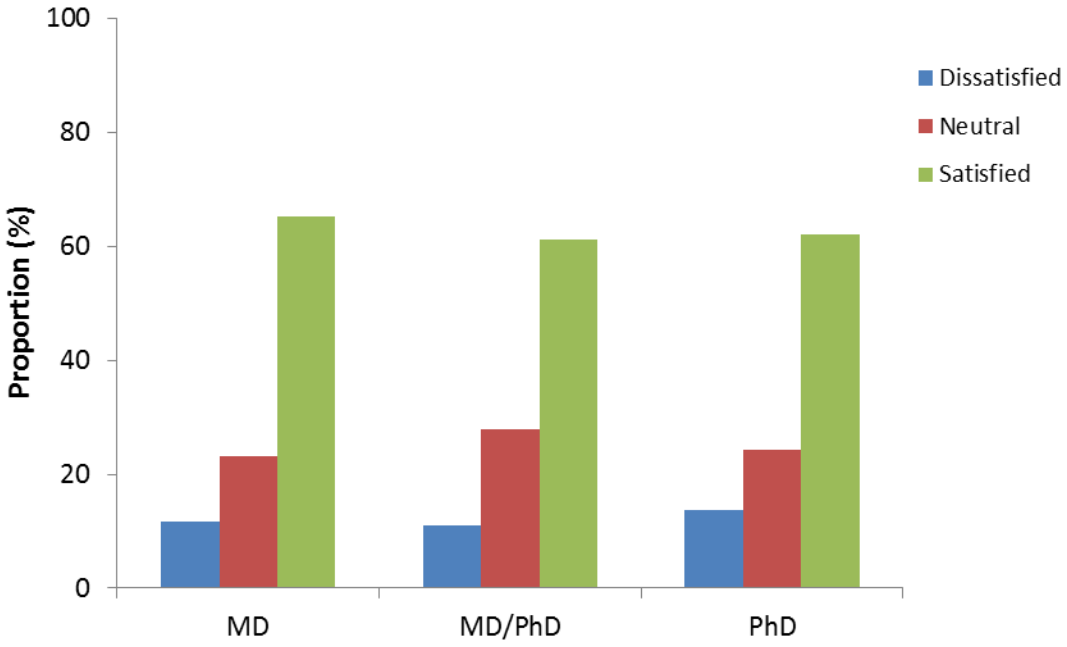


*Figure 34.* Overall job satisfaction of women faculty at the University of Pittsburgh per highest degree held.

### 4.4.2 Analysis of Proxy Measures

Since it is difficult to survey faculty members who have departed the institution, many survey questions to assess factors that could lead to faculty attrition are framed such that they measure the faculty's intention of leaving the institution. The predictors of serious *intent* of leaving, provides a suitable proxy as to the reasons for faculty deciding to actually leave their job. Various studies have used 'intent to leave' as predictors or a proxy for turnover in academic and non-academic settings (Bland, Center, Finstad, Risbey, & Staples, 2006; Lee & Mowday, 1987; Tett & Meyer, 1993).The questionnaire used in this study captured the faculty's intention of leaving either the University of Pittsburgh and/or academic medicine in the following ways: (1) directly asking faculty about their overall sentiment about academia and their intent to stay or leave; (2) intent of faculty members to take up a position outside the University of Pittsburgh in the past and/or in next five years; (3) if they decide to resign, would it be for taking up another position within academia/ alternate career options outside of academia/ staying home; (4) the top 5 reasons to leave the University of Pittsburgh/academia; and (5) if they were to begin their career again would they choose academic medicine/University of Pittsburgh.

**Asking the faculty their overall sentiment about academia and their intent to stay or leave.** This particular question was designed to capture the sentiment of the faculty regarding academia in general and their intent to leave or stay in academia. This question was intended to gauge the faculty sentiment about academic medicine as a whole rather than focusing solely on working for the University of Pittsburgh. The opinions were broken up into the faculty's satisfaction or dissatisfaction with academic medicine and how that factored into their intent to

stay or leave. The participants answered in one of four choices; (1) Satisfied with academic medicine and would not leave; (2) Satisfied with academic medicine, but would leave; (3) Dissatisfied with academic medicine, but would not leave; (4) Dissatisfied with academic medicine and would leave.

The first category of responses was one where survey participants chose that they were satisfied with their job and would not leave academic medicine. This is a rather obvious choice of answer because if a person is satisfied with their job, there would be no reason to leave their job to pursue alternate career options. As a group, 43% (116/270) of women faculty responded that they were satisfied with their job and would not leave academic medicine. While 31% of instructors, 38% of assistant professors and 35% of the associate professors responded that they were satisfied and would not leave, a very high proportion of professors (68%) reported that that were indeed satisfied with their job and would not leave their current position (Figure 35).

The second category was where participants were satisfied with their job, but still opted to leave academic medicine. This is an interesting selection since it indicates that even though the faculty was satisfied with their job, they would rather leave their current job in academic medicine and explore other career options. There were a substantial number of women faculty, 27% (73/270), who selected this response. This was observed more so in junior faculty as compared to their senior colleagues. 46% of the instructors, 31% of assistant professors, 27% of associate professors and 13% of professors responded that even though they were satisfied with their job, they would consider leaving academic medicine (Figure 35).

The third category was where participants, even though, dissatisfied would continue their career in academic medicine and would not leave their job. Similar to the second category, this choice of response was also an interesting selection since it expressed the sentiment that even

though the participants were dissatisfied with their job in academic medicine, they would choose to continue working in academic medicine rather than pursuing alternate career options. There were 16% (44/270) of the participants who selected this response. 11% (2/13) of instructors, 17% (22/130) of assistant professors, 19% (14/74) of associate professors, and 11% (6/53) of the professors voted for this answer (Figure 35).

The last option for this question was "I am DISSATISFIED in academic medicine and would LEAVE". Similar to the first category, this choice of answer is a rather straightforward action to a reaction. If someone is dissatisfied with their current job, they would be inclined to leave their current job to pursue alternate career options. Of all the responses possible to the question, this response gathered the least votes. Only 14% (37/270) of the survey participants selected this answer. Eight percent (1/13) of instructors, 14% (18/130) of assistant professors, 19% (14/74) of associate professors and eight percent (4/53) of the professors selected this answer (Figure 35).

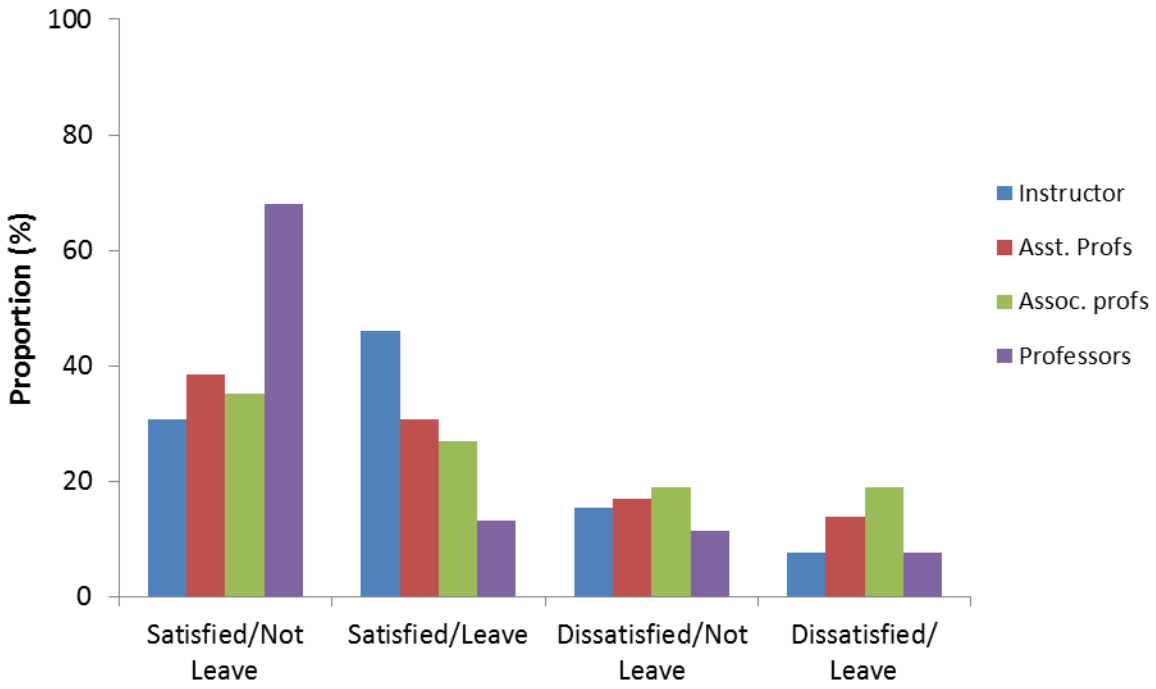


*Figure 35.* Overall sentiment of women faculty regarding their impression of academic medicine as a career option as a proxy measure for intention to leave their current position.

Due to the nature of this study that focuses on attrition of women faculty in academic medicine, two of the above responses were analyzed in further detail; option 2 where participants were satisfied, but would still leave and option 4 where participants were dissatisfied and wanted to leave academic medicine to pursue alternate career options. As mentioned above 27% of the survey participants chose option 2 whereas 14% chose option 4. For the 73 faculty that chose option 2, the top three reasons for leaving academic medicine were 'better opportunity elsewhere', 'pressure to get funding', and 'low salary'. More than half (55%) of this specific cohort of survey respondents voted for these three specific reasons with 21% choosing 'better opportunity elsewhere", followed by 18% for 'pressure to get funding' and 16% for 'low salary'. The rest 45% of the respondents were divided among various options that were listed in the

question. Similar to what was observed for option 2, the top three reasons for the 37 faculty that option 4 were ‘better opportunity elsewhere’, ‘pressure to get funding’, and ‘low salary’.

**Intent to take up a position outside the University of Pittsburgh in the *past* five years.** Another proxy measure to determine “intent to leave” was the question that asked whether the faculty ever considered taking up a position at another academic medical institution, besides the University of Pittsburgh, in the past 5 years. The purpose of this question was to determine the satisfaction of women faculty specifically with their job at the University of Pittsburgh, and not with academic medicine as a whole. The answer selection was a binomial choice (yes/no), and 96% (267/279) of the women faculty responded to the question.

Overall a large percentage of women, 71% (189/267) had considered leaving the University of Pittsburgh in the past five years. 63% (8/13) instructors, 79% (100/127) of all assistant professors, 70% (52/74) of all associate professors, and 55% (29/53) of all professors had considered leaving the university in the past 5 years (Figure 36). The chi square analysis of the data suggests that difference in the proportion among the different faculty ranks who did/did not consider leaving the University of Pittsburgh in the past five years was statistically significant (p-value $<0.05$). This analysis indicates that not only did a significantly greater proportion of faculty, regardless of rank, consider leaving the University of Pittsburgh for another academic institution, but also that junior faculty were more likely to leave the University of Pittsburgh for another academic institution, as opposed to their senior colleagues.

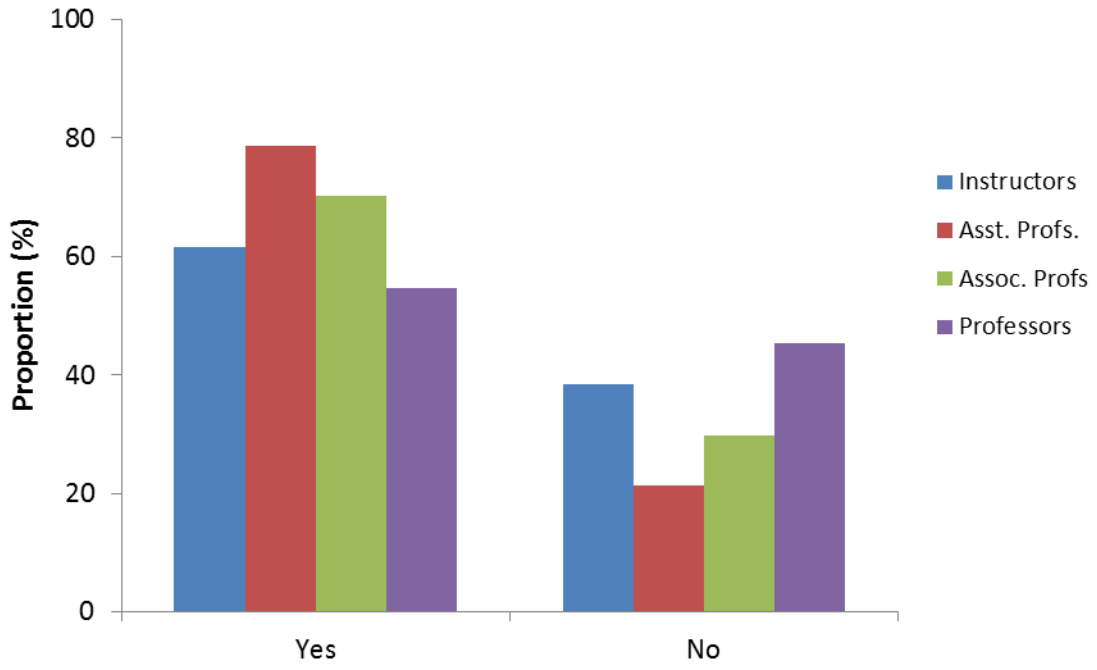


*Figure 36.* Proportion of survey participants who considered leaving the University of Pittsburgh in the past five years as a proxy measure for leaving their current position.

**Intent to take up a position outside the University of Pittsburgh in the *next* five years.** This question in the survey was intended to capture the faculty's likelihood to leave the University of Pittsburgh in the next five years and take up another position within academic medicine. Of the 95% (266/279) women faculty who responded to this question, about half of the respondents (52%) anticipated leaving the University of Pittsburgh in the next five years. Except for the professors, more than half of the other faculty ranks voted "yes" to the probability of leaving in the next five years. While 58% (7/12) of instructors, 57% (73/128) of assistant professors, and 51% (37/73) of associate professors intended to leave University of Pittsburgh, 40% (21/53) of the professors voted "yes" for anticipating leaving the university. Considering

that they have attained considerable seniority within their academic institution, the proportion (40%) of professors who intended to leave was higher than anticipated. Further analysis of the "hypothetical attrition", using the tenure status filter, showed that 62% of tenure-track assistant professor anticipated attrition from the University of Pittsburgh. 58% of the tenure/tenure-track associate professors could foresee themselves, leaving in the next five years. In comparison, 38% of the tenured professors voted for the probability of leaving the university in the next five years (Figure 37). While this number is relatively lesser than that observed for associate/assistant professors, it is still a significant proportion, if taken in isolation.

The chi square analysis of the data suggests that difference in the proportion among the different faculty ranks who did/did not consider leaving the University of Pittsburgh in the next five years was not statistically significant (p-value = 0.19).

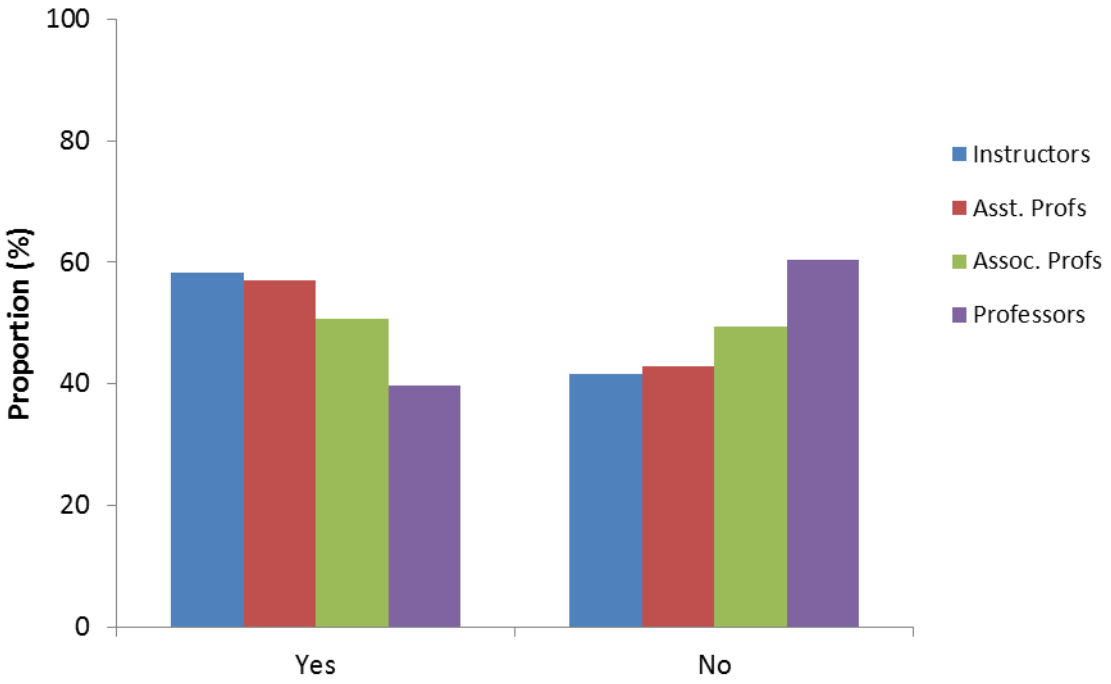


*Figure 37.* Proportion of survey participants who would consider leaving the University of Pittsburgh in the next five years as a proxy measure for leaving their current position.

**Career options after leaving the University of Pittsburgh.** Besides asking about their reasons to leave, women faculty were asked what their career options would be *if* they decided to resign from the University of Pittsburgh. Three choices were presented to the survey participants; 1) staying at home; 2) taking another position within academia; and 3) career options outside academia. 96% (269/279) of women faculty responded to this question. Of all the responses received, the majority (60%) of faculty, irrespective of rank, envisioned taking up a position at an alternate academic medical institution besides the University of Pittsburgh, 22% would prefer to change career courses by taking a position outside of academic medicine while only 18% of all those who responded to this question voted for 'staying at home'.

The further breakup of the data showed that 46% of instructors, 65% of assistant professors, 53% of associate professors and 60% of the professors would choose another position within academia over the University of Pittsburgh *if* they were to leave. As for career options outside of academic medicine, it was no surprise that a higher proportion of instructors (38%) opted to choose likewise. Thirty three percent of assistant professors, 36% of associate professors and 28% of professors opted to choose career options outside of academic medicine *if* they were to resign from their current position at the University of Pittsburgh (Figure 38). This relative increase observed in instructors who consider career options outside of medicine indicates that young faculty in the infancy of their career carefully evaluate whether they would like to continue working in academic medicine, knowing the challenges that they would face, or they would rather choose another career path.

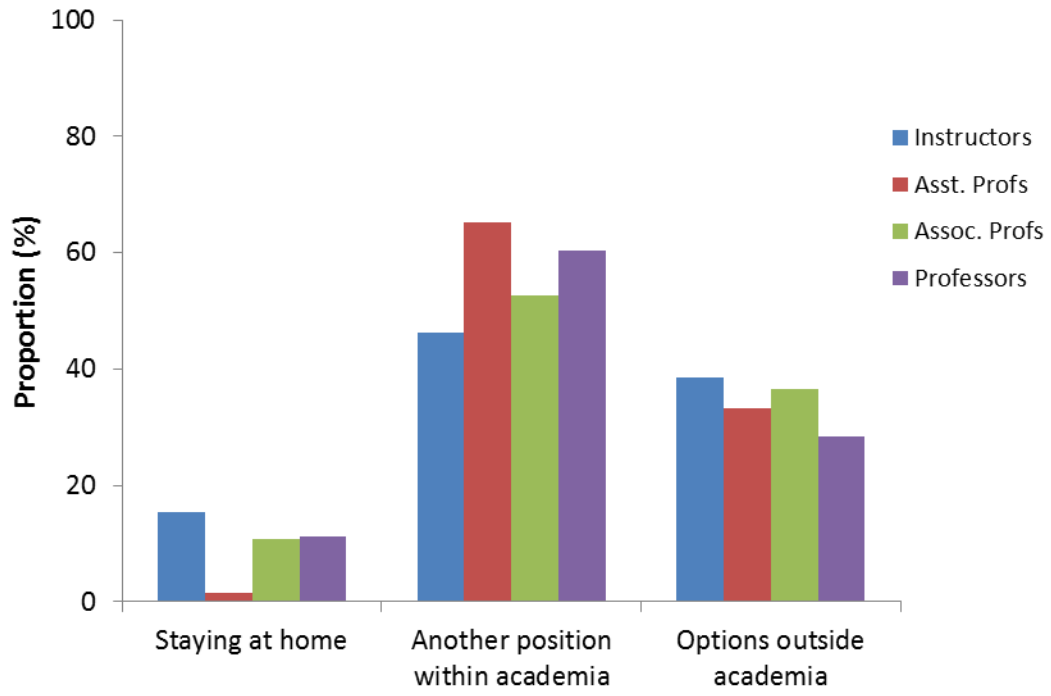


*Figure 38.* Career options that women faculty would choose if they decided to resign from the University of Pittsburgh.

**Five top reasons to leave the University of Pittsburgh**. In addition to previous questions that measured the satisfaction levels with various factors that impact women medical faculty, the survey directly asked women faculty to rank the top five reasons, if they were to resign from the University of Pittsburgh, in the next five years. This question was designed to directly capture the main factors that could cause attrition.

Ninety-one percent (255/279) of the survey participants responded to this specific question and ranked their top five choices from various different options provided. The data was then analyzed in two ways; 1) five most commonly selected answer choices and the sum of all the responses determined the top five choices; 2) frequency histogram for the option that was the consensus' first choice. The data for each analysis is presented in descending order of frequency.

For the first method of analysis, it was observed that the most common reason to resign from the University of Pittsburgh was 'better opportunity elsewhere'; 79% of the women faculty had selected this option as one of the top five reasons to resign from their current position. The following 4 choices were at least 20 percentage points behind the top option; High workload (57%), low salary (56%), pressure to obtain funding (55%), and poor career advancement opportunities (50%) (Figure 39).

The second analysis was performed by comparing the number of responses who chose a particular reason as the top most reason to resign from their current job at the University of Pittsburgh (top pick analysis). Better opportunity elsewhere was cited as the most important reason to resign from the University of Pittsburgh by 24% of the women faculty. Pressure to get funding was cited as the most common reason by 14%, high work load and low salary were cited

by 13%, whereas poor career advancement opportunity was ranked 5th with only 6% of the faculty choosing it to be the top most reason for leaving Univesity of Pittsburgh (Figure 40).

**Five top reasons to leave academia.** Similar to the hypothetical attrition analysis that was performed specifically with reference to the University of Pittsburgh; the survey asked women faculty to rank the top five reasons, if the faculty chose to leave academic medicine, in general, in the next five years. 91% (255/279) women faculty responded to the question. Of these, 77% chose 'better opportunity elsewhere'; the other four reasons being low salary (64%), pressure to get funding (60%), high work load (60%), and poor career advancement opportunities (44%). This data showed very similar results as observed specific to the University of Pittsburgh except low salary that ranked second as opposed to third previously (Figure 39).

As far as the top-pick analysis was concerned for hypothetical attrition from academic medicine in general, the data showed very similar results as observed specific to the University of Pittsburgh, wherein 22% of the total number of women chose 'better opportunity elsewhere' as their first choice, followed by pressure to get funding (21%), Low salary (16%), high work load (11%) and, lastly, poor career advancement opportunities (3%). The only difference between academic medicine in general as compared to the University of Pittsburgh, in particular, was the interchange in the rank between high work load (#3 for Univ. of Pittsburgh, #4 for academia and low salary (#4 for Univ. of Pittsburgh, #3 for academia) (Figure 40).

These results were remarkably similar to the results that were observed with reference, specifically, to the University of Pittsburgh.

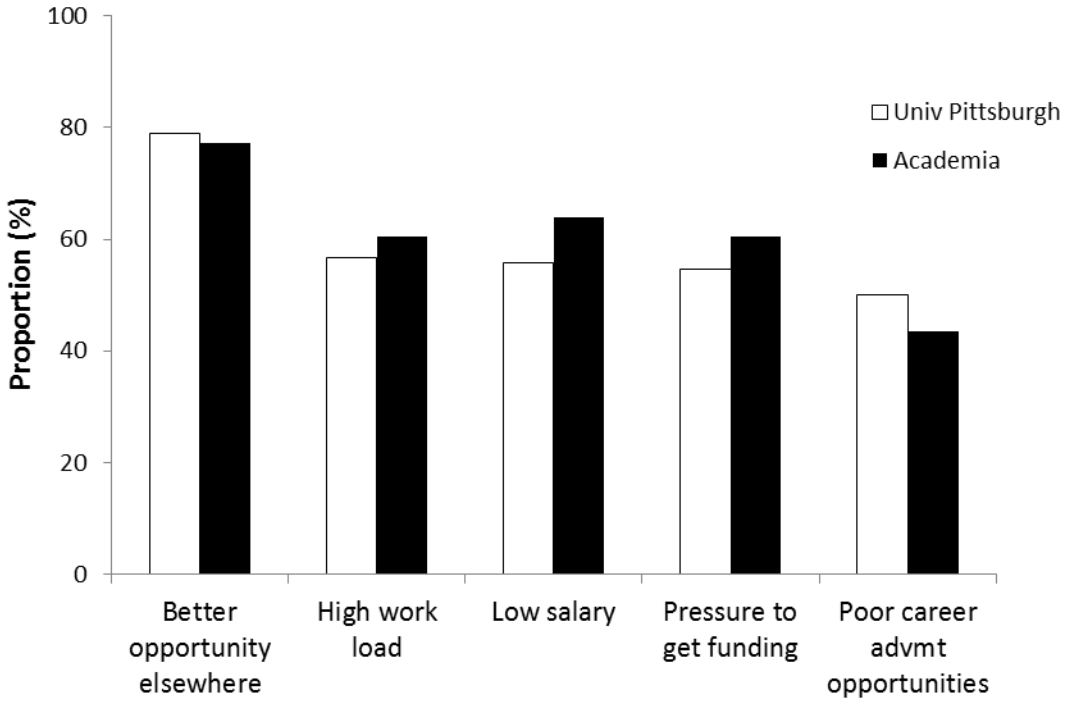


*Figure 39.* Top 5 reasons chosen by survey participants if they decided to leave the University of Pittsburgh (white bars) or academic medicine (black bars).

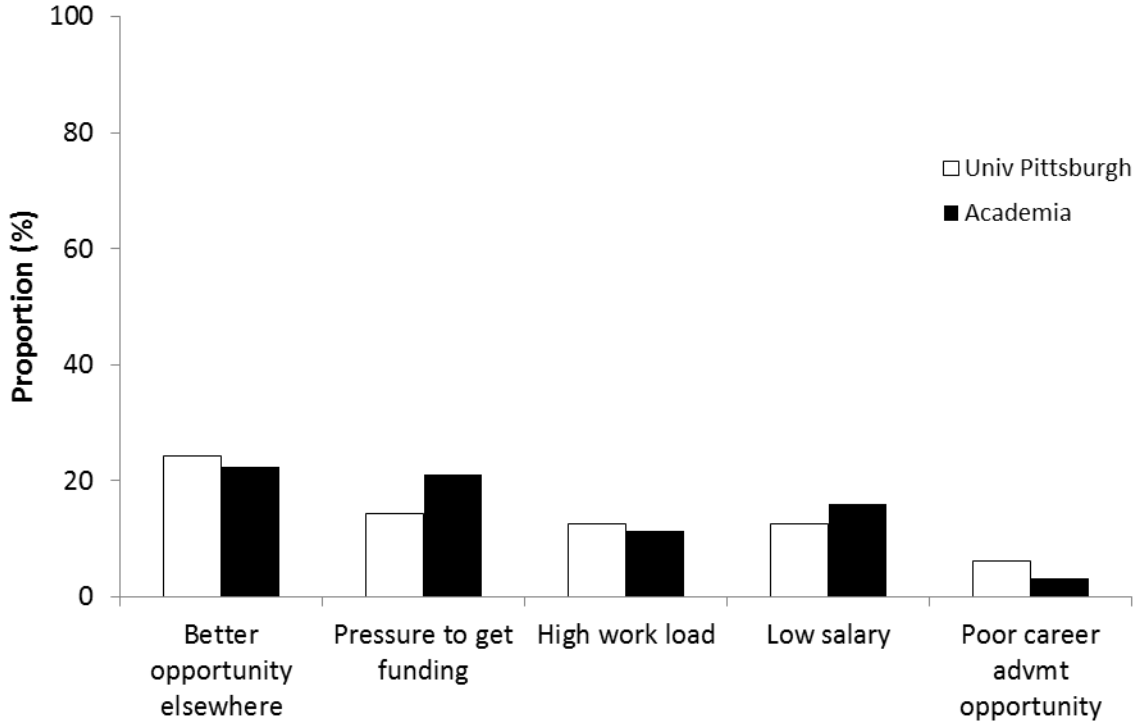


*Figure 40.* Primary reason chosen by women faculty if they choose to resign from the University of Pittsburgh (white bars) and academic medicine (black bars).

**Choose the University of Pittsburgh if had the option to restart career.** For the University of Pittsburgh the most important question was the desirability of the institution and whether the women faculty would select the university again if they had to restart their career. Survey participants had the choice to select one of five options; definitely yes, probably yes, probably no, definitely no and not sure. 91% (254/279) of the survey respondents answered this specific question. It was observed that the majority of the faculty (45%) chose 'probably yes' and the remaining were distributed between 'definitely yes' (23%), 'definitely no (4%), 'probably no' (15%) and 'not sure' (18%).

As far as instructors were concerned, 58% selected yes (16% definite, 42% probably) whereas 42% selected probably no. There were no instructors who would definitely have not chosen the University of Pittsburgh. Regarding the rest of the faculty (assistant professor, associate professor and professor), 40-48% of them selected 'probably yes' for choosing the University of Pittsburgh again. A high proportion of professors voted 'definitely yes' (38%) and 'probably yes' (40%) (Figure 41). The chi square analysis of the data suggests that not only were the faculty, as a whole, more likely to choose the University of Pittsburgh, but also that difference in the likelihood of the faculty choosing the University of Pittsburgh among the different faculty ranks was statistically significant (p-value <0.05); junior faculty more likely to not choose the University of Pittsburgh as opposed to senior faculty.

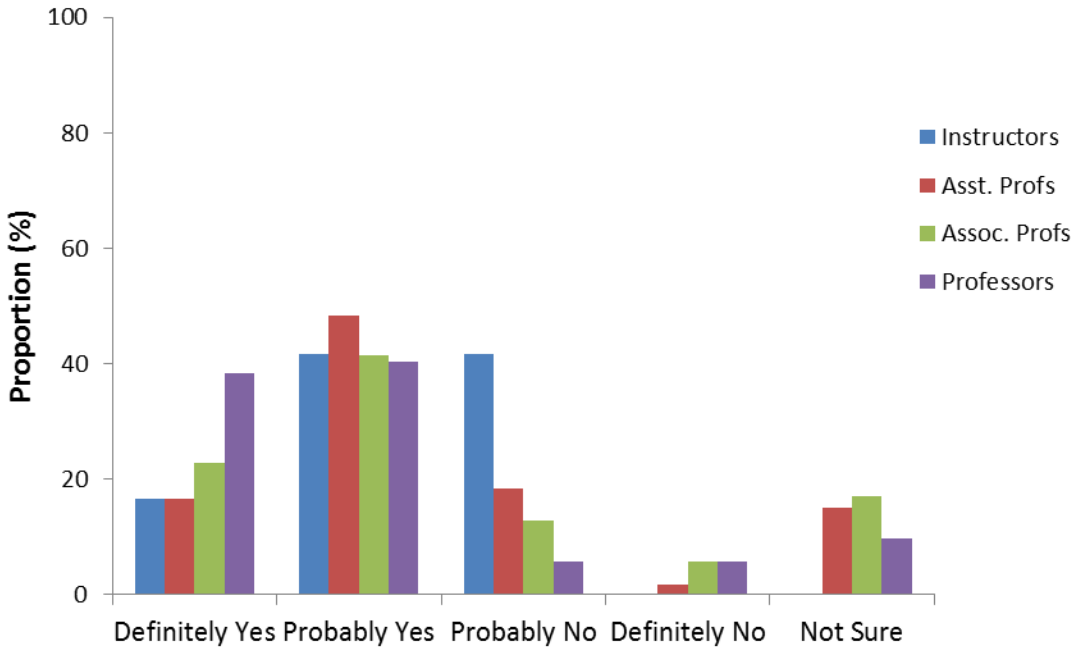


*Figure 41*. Likelihood of women faculty who would choose the University of Pittsburgh as the institution of choice if they had to restart their career.

**Would choose academic medicine if had to restart career**. The construct captures the interest of the women faculty regarding academic medicine as a career path. Overall, 91% (254/279) women responded to this question, out of which 45% voted 'probably yes', 41% voted 'definitely yes', seven percent voted 'probably no', one percent voted 'definitely not' and the remaining six percent were not sure.

Over 80% of the all faculty ranks (83% of instructors, 84% of assistant professors 82% of associate professors and 96% of professors) would choose academic medicine as a career path. As a general trend, the conviction was stronger as the faculty grew in seniority. While the majority of the responses from instructors (58%) and assistant professors (51%) were in the 'probably yes' category, the majority of responses from associate professors (49%) and professors (71%) were in the 'definitely yes' category (Figure 42).

The chi square analysis showed that the difference in the probability of choosing academic medicine as a career path was significant among the different faculty ranks (p-value $<0.05$). This suggests that as the faculty progressed to the rank of professor, it reinforced their decision of choosing academic medicine as a career.

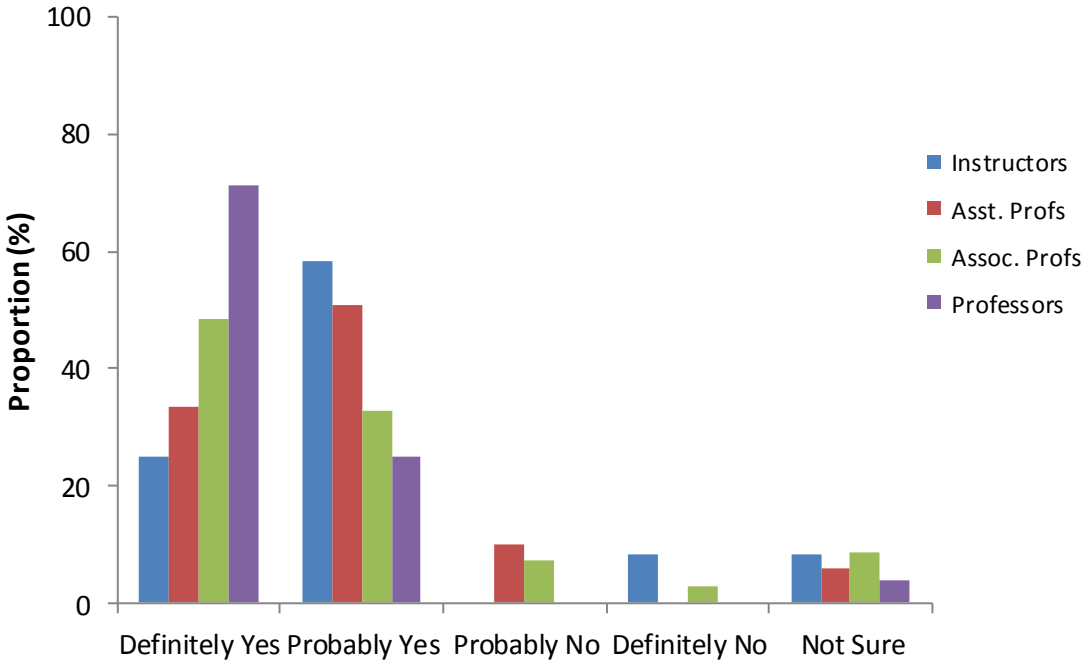


*Figure 42.* Likelihood of women faculty who would choose academic medicine as the career of choice if they had to restart their career.

The following chapter discusses in detail the conceptual and theoretical explanation of the data obtained.

# 5.0 DISCUSSION

The comprehensive study of the literature indicates that attrition is an intricate process. Several distinct organizational (environmental) variables and internal variables combine to exert their influence on women faculty decisions to stay or leave their current institutions. This connection that the literature demonstrates is described in the conceptual framework illustrated in Chapter 3 (Figure 6.). The variables used in the analysis, as described in Chapter 4, are drawn from the conceptual framework. The different constructs and variables assist in conceptualizing attrition of women faculty from academic medicine at the University of Pittsburgh. The study focused on University of Pittsburgh as it is a research one institution whose School of Medicine ranks 18$^{th}$ in the country (U.S. News and World Report, 2014); University of Pittsburgh ranks fifth overall and third among public institutions in the U.S. National Science Foundation's ranking of federally funded research. The School of Medicine and its affiliates rank 5$^{th}$ among U.S. medical schools in National Institutes of Health (NIH) funding (University of Pittsburgh, 2014). To maintain the ranking, at the least, and to strive to do better creates high amounts of pressure on faculty.

The variables used in the questionnaire contributed to the principle of the study, though not all were statistically significant. In certain instances this was unanticipated as other

referenced research studies show clear correlations. The absence of the statistical significance may have alternate justifications.

## 5.1 PERSONAL AND PROFESSIONAL DOMAINS (DEMOGRAPHIC)

On the whole the demographic domains were not significant since the study is gender specific, i.e. only women faculty were the chosen population; and the analysis focuses mainly on the professorial ranks. The INSTRUCTOR, ASSISTANT PROFESSOR and ASSOCIATE PROFESSOR variables are important since they are demographics that have an increasing probability of attrition. The associations which showed significance were drawn between ranks and variables that fell into FACULTY DEVELOPMENT (Environmental Factors); RESEARCH FUNDING; and WORK-LIFE BALANCE (Internal Factors). Proxy measures were placed for indications and intent to leave the institution and/or academic medicine as a whole. It has to be taken into consideration that faculty at each rank experience life in the academy in different ways and their decisions to leave are different from each other's.

MARITAL status was not significant since a tally of the respondents showed 83% of the women being married and presence of spouse showed no influence on satisfaction levels. Similarly RACE is not significant as 77% of the respondents were white; even if one takes into consideration the small sample size there was no difference among the various racial groups. 79% of the sample had CHILDREN in the household, and the presence of children has the possibility of influencing some of the factors given in the sections below.

Department affiliation or academic divisions have a high association to dissatisfaction with various variables denoting specifics to individual faculty responsibilities. Due to the sensitive data being discussed in this study that consists of a single gender and a small sample size, details published specific to academic divisions can be identifiable. Therefore, to maintain confidentiality and keep the data de-identified, faculty academic affiliations were not analyzed in detail. A basic overview of the faculty affiliations showed notable differences between satisfaction levels among academic divisions, as supported by other research studies and literature reviewed in Chapter 2.

## 5.2 ENVIRONMENTAL FACTORS

The conceptual framework illustrates the various variables that influence decisions for departure from an institution or from the field of academic medicine. The environmental factors fall in the realm of the organizational influences that a faculty may not have control or influence over. These barriers can hinder career progress and can ultimately lead to attrition. The first variable, SALARY, was analyzed for levels of satisfaction. Surprisingly, it was not significant for this case study, when analyzed with the ranks being combined as one; however, between the ranks, disparity was observed. The lower ranks that comprised mainly of the instructors and assistant professors get affected by their status at the institution; though the sample size of the instructors that responded to the survey was very small, the distribution trend does not give a clear indication of level of satisfaction. There is an increasing positive sentiment with increasing academic rank, and a greater proportion of professors seemingly satisfied with their salaries as

compared to the lower ranks such as instructors and assistant professors. “There should be better compensations for researchers and physicians to remain in academic institution. It makes no sense to work way more then (sic) you would in a non-academic institution and paid less. There should be a better balance between lifestyle/compensation.” stated one associate professor. The professorial hierarchy plays an important role as it can be an essential contributor to the faculty’s pay scale, hence a high percentage of associate professors and full professors feel relatively well compensated. One drawback of this analysis would be the lack of comparative data of male faculty compensation. The research literature showed that usually women earned less than their male counterparts (Bhattacharjee, 2004; Mangan, 2010).

About half the women faculty were satisfied with their experience regarding the level of opportunities given to the faculty regardless of their gender, this addressed the issue of GENDER BIAS at the School of Medicine. The opportunities in this construct are related to promotions, inclusiveness, leadership roles, etc. Several authors (e.g. Burgess et al., 2012; Cropsey et al., 2008; Tesch et al., 1995) have stated that gender bias is one of the primary reasons for job dissatisfaction and/or reason for attrition. But in this study the women faculty did not list gender bias to be a factor among their potential reasons for wanting to drop out of academic medicine or the University of Pittsburgh. There could be other areas that could be present where prominent gender bias could be felt; more detailed questions would have helped obtain true satisfaction levels. Although, it was interesting that only fifty percent of the women expressed satisfaction, indicating that a substantial portions of the women were feeling some kind of gender bias at the university.

The construct of MENTORING was analyzed using the variables QUALITY OF MENTORING and PERSONAL INTERACTION with tenured faculty. The review of literature,

see Chapter 2, stated that quality of mentoring is one of the factors that is responsible for positive impacts of mentoring on the career development and research productivity for women (Illes et al., 2000; Palepu et al., 1998; Sambunjak et al., 2006; Tracy et al., 2004); with personal interaction with tenured faculty being equally important as the guidance provided by senior faculty members enhances academic medical careers of junior faculty (Wolfe, 2005). The quality of mentoring showed a trend in the levels of dissatisfaction. As expected, within the dissatisfaction scale, the junior most faculty were the most discontented; the professorial rank has to be taken into consideration for this observation. As the faculty ranks went higher the level of dissatisfaction decreased. The junior faculty is most affected by mentoring and the percentage of instructors, assistant, and associate professors, being dissatisfied, cannot be deemed insignificant and overlooked. The amount of personal interaction with tenured faculty can also enhance quality mentoring for the junior faculty (Illes et al., 2000; Palepu et al., 1998; Sambunjak et al., 2006; Tracy et al., 2004).In the three ranks of instructors, assistant professors and associate professors more than 50% of the respondents were satisfied with their interactions, highlighting successful collaborations within the ranks. The full professors are the senior faculty in their respective departments and have the additional pressure to guide and lead the junior faculty; and maintain a balanced equilibrium in their departments. Literature shows that women often face discrimination and are prevented from rising to leadership roles, as a result more number of men are seen in leadership roles and when department leaders are males the female faculty may find it difficult to communicate with these male department leaders (Carnes et al., 2008; Wright et al., 2003). The research study conducted by Cropsey et al., 2008 stated departmental leadership as one of the main reasons for leaving an institution. For this study the variable of satisfaction with LEADERSHIP at SOM obtained high levels of satisfaction with

departmental leadership. The results were insignificant with respect to attrition and cannot be considered as a factor at this institution.

The professional advancement of a faculty has various facets involved, which, when not geared towards the faculty's interests, results in attrition. The literature review revealed that, the most common reasons for leaving were chairman/departmental leadership issues, career/professional advancement, low salary and diverse personal reasons (Cropsey et al., 2008). The construct of FACULTY DEVELOPMENT had a total of five variables in the questionnaire; these measures are key to a successful tenure bid or a renewed contract. The importance of colleagues understanding and valuing a pre-tenure faculty is vital. At the commencement of an academic career for a newly appointed, untenured academician the prospect to collaborate and be valued by her peers may be significant. For a faculty which is on contract validation from peers provides renewal of contract bids. The results of the first variable which was on the department providing opportunities to COLLABORATE with other members of the department showed by far all ranks were satisfied/very satisfied with faculty interactions and cooperative working environment and the results were statistically insignificant for this variable. It means that these faculty do not feel isolated from their colleagues and in fact have good working relations in their departments. Second variable was the PACE of the faculty's professional advancement at SOM. This variable denotes the speed of the faculty's career path. The association of this variable with each rank showed a small percentage of junior faculty being satisfied with the pace of their professional progress at SOM. The trend observed in the satisfaction scale exhibited no instructors being satisfied with their pace of professional development and only a small proportion of assistant and associate professors expressed satisfaction. It is to keep in mind that the satisfaction levels of professional advancement are directly related to the professorial ranks

since the higher the rank attained the more satisfied the faculty would be. To analyze this further, response of each rank for this variable was averaged on the 5-point Likert Scale; the full professors averaged closer to being satisfied; the junior ranks hovered at the neutral mark with the instructors being slightly below. The instructors are usually very new to the academic career and are usually not sure if they would be advancing in the field at the institution or would look for alternatives. The assistant and the non-tenured associate professors are looking at a long term career path and are more likely than their tenured colleagues to feel overwhelmed by the responsibilities of their positions.

The third variable, PROSPECTS for career advancement, was included in the construct of faculty development since it described a possibility of a clear proposed path of advancement which when known to faculty provides motivation for continuation. The analysis was performed in two ways; the first was to break out each rank and their 5-point Likert Scale was averaged and graphed. The bar graphs showed the junior faculty averaging at the neutral mark very much similar to the above described variable 'pace of professional advancement' which is the speed of a faculty's advancement versus 'prospects for career advancement' which are the projections of advancement. These prospects can also be dependent on other environmental factors like gender bias and mentorship. For the second type of exploration of this data, grouped analysis of the various ranks was performed, and a remarkable trend in the satisfied scale was seen when the data was graphed. As the ranks moved higher the satisfaction level grew, indicating that the number of junior faculty were, proportionally, not as satisfied as the senior faculty. What was interesting to observe was that the overall number of faculty, in each rank, were much less than expected. The general idea would be that as the faculty moves higher in the ranks, the more they get established, hence higher numbers are satisfied with their prospects of career advancement.

But what was observed was that the total number of satisfied faculty was much less. One assistant professor, commenting on her situation, stated: “Right now, the benefits through Pitt is what is keeping me in this position. I also love working with my colleagues and the students. Promotion however, is an unlikely goal and even if I were to get promoted, it seems to have little tangible reward (i.e. no increase in pay or benefits- just a different title)”. The data obtained is significant as the intent to stay is highly dependent on the future pathway prepared for each faculty.

One of the various ways to advance in professional life is to participate in PROFESSIONAL DEVELOPMENT OPPORTUNITIES provided by the academic institutions. A number of institution-led initiatives have been introduced to support women faculty in their careers (Froom & Bickel, 1996). At the University of Pittsburgh, there are three such events organized for junior faculty, of which two are specific to women faculty, namely Women in Medicine and Science Forum, and Sunrise Series for Women Faculty and Fellows. The third is an interactive three day workshop in Scientific Management and Leadership designed for postdoctoral fellows, clinical fellows and junior faculty. Women in Medicine & Science Forum is “an annual event to celebrate and highlight the presence and accomplishments of women in medicine and science at the University; to provide a venue for women to share strengths, talents, and experience; and to foster an academic culture which supports the professional and personal development of women students, postdoctoral and clinical fellows, and faculty members in medicine and science” (University of Pittsburgh Office of Academic Career Development, 2014c).

Sunrise series for women faculty and fellows is an early morning venue for women faculty, fellows, and students to network across schools and departments. Their aim is to share

and learn from their colleagues, they are introduced to strategies for advancing their career and achieving personal satisfaction from the experiences of other women (University of Pittsburgh Office of Academic Career Development, 2014b). The Scientific Management and Leadership workshop provides insight into leadership and team building as well as direction on how to develop and manage a scientific laboratory or research program. It also teaches different ways to improve productivity, and how to enhance creativity and innovation in research or classroom environment of the faculty (University of Pittsburgh Office of Academic Career Development, 2014a).

The data collected on the awareness of these, above mentioned, professional development events, showed that the majority of the respondents knew of these events. It was observed that the higher the rank, the more number of faculty were aware of these events, which is counter intuitive as when a junior faculty is starting their academic career they should be participating in more number of professional development events. An altered argument would be that the higher the rank, the more exposure to professional development events since the senior faculty has been around in academic medicine longer and have gained more knowledge. Strangely the highest percentage of faculty satisfied with opportunities for professional development was that of the full professors. This variable too is related to professorial rank. The junior faculty that are more susceptible for attrition and need the extra support towards professional development, seem to be leaning towards being more neutral in satisfaction, indicating modifications that should be made to enhance better professional development for the junior faculty. As stated by a senior faculty member "I had a very difficult situation early in my career because I spent 11 years in a non-tenure stream position. It was very difficult to find a tenure-stream position. Once I found the

position I feel that I had good support from my superiors, but I was not aware of University professional development opportunities until I felt I was too old to make a move."

The last variable in the faculty development construct was RECOGNITION GIVEN BY THE CHAIR FOR EXEMPLARY WORK; it measures the support and acknowledgement given by the department chair. The chairperson helps in creating a departmental environment conducive to faculty success. The Chair's meetings with junior faculty to discuss career planning and progress towards tenure help increase personal connections and build confidence of the junior faculty (Osborn et al., 1992). Surprisingly the data showed the junior faculty being more neutral about their respective Chair, than clearly satisfied. A substantial percentage of full-professors were contented with their Chair but it is to be noted that these results are directly related to professorial rank and that the Chair is usually a contemporary peer to the full-professors, making it a kind of a bias. One suggestion could be to incorporate changes, whether at the departmental level or at the administrative level, to help connect the chairperson with the junior faculty which could help move more junior faculty towards satisfaction with the Chair because being neutral does not indicate being clearly satisfied.

## 5.3 RESEARCH FUNDING

RESEARCH FUNDING is a key factor in academic medicine. The literature states that many women medical faculty deal with frustrations regarding research funding (Levine et al., 2011). For research faculty the continual stress to secure funding, which is highly dependent on publishing in high quality journals, is added barriers to academic success. The average of the

response of each, when observed on the 5-point Likert Scale, indicated the entire faculty, irrespective of rank, was just about reaching the neutral point. The combined analysis showed significant numbers of faculty were dissatisfied, and this was one of the variables that, though related with rank, was not dependent on it. The dissatisfaction was across all professorial ranks, and even though full-professors are senior, tenured or on long term contracts, the pressure to get funding does not ease off, hence clearly indicating that the junior ranks were noticeably affected. Similarly, the status of the faculty, whether being on tenure-track, tenured or on-contract, was not related to satisfaction levels. Unfortunately the nature of academic medicine depends predominantly on research funding and cannot be avoided under any circumstances. The faculty at SOM dedicates many hours towards their clinical workload, which reduces their time towards their research productivity. The recommendation would be to reduce clinical hours and plan better schedules so that time is left towards conducting research and have less stringent rules about the kind of research monies a faculty is required to bring in, since funding has gone down over the last few years.

## 5.4 INTERNAL FACTORS

Work-life imbalance is one of the chief factors influencing the decision of a woman faculty's departure from their current institution or academic medicine. The work-life imbalance construct consists of several variables; the first variable FLEXIBLE WORKING HOURS shows a high percentage of respondents, from all the ranks, voting for being satisfied/very satisfied with the flexibility given by the institution. This finding was contrary to the findings of the study by

Villablanca et al., 2011 which stated that absence of family-friendly policies, including flexibility, led to increased unhappiness with respondents' respective institutions. This is a positive indication for the university and should not consider this variable as a factor that would influence attrition. The matter of concern here is, the SUPPORT SYSTEM PROVIDED FOR CHILDCARE, where less than one fourth of the respondents were satisfied with this variable. A small proportion of faculty, across all ranks, showed satisfaction with the university's support system for childcare. Surprisingly, very few professors voted for being satisfied; considering most of the professors are older in age and usually do not have very young children. It can be deduced that their prior experience, as a junior faculty with very young kids, was not very pleasant therefore influencing their response to this variable. As expected of the responses of the junior faculty, a small percentage of them were satisfied with the support system provided for child care. The dilemma of balancing work and family obligations is complicated by the fact that junior-level women faculty are expected to be most productive in a phase of their life that coincides with their child-raising years (Draznin, 2004). The women faculty's ability to BALANCE PROFESSIONAL AND PERSONAL TIME at the University of Pittsburgh showed that fifty percent of the professors were satisfied, but not as many junior faculty voted for the same, overall the faculty did not indicate an uncontended vote for being 'satisfied/very satisfied'. The interesting observation was that the trend among the dissatisfied faculty showed a significant drop when the faculty reached full-professorship. The general thought would be that as the rank goes higher, responsibilities increase, workload increases and the faculty would find it challenging to balance their professional and personal life. This is clearly seen in the junior faculty, though the dissatisfaction drops at the professor rank, this indicates some event/change that might cause the faculty balance their life appropriately. The trend seen in the satisfied scale

supports this evidence as more number of professors vote being satisfied. Even though the ability of balancing professional and personal life is more of an internal factor, the women faculty needs some external assistance in wading through this delicate equilibrium. Especially if the faculty is on a tenure-track stream and has young children, it is a challenge to manage their career without compromising on their children's upbringing.

CHILDREN AND TENURE-TRACK COMPATIBILITY is an important variable both for new mothers and mothers with young children on a tenure-track. Even though the University of Pittsburgh provides one extra year during the length of tenure stream service for new mothers during their tenure-track, it is still not sufficient since adjusting their life around a new baby is hard enough without the added stress and pressure of building their portfolio for attainment of tenure. The ranks that are most affected by this are the assistant professors; they are usually starting off fairly new in their academic career and have to meet the requirements and expectations of their position. The data collected showed half of the assistant professors being dissatisfied by this variable. The weighted average clearly showed the assistant and associate professors as being dissatisfied. Being on a tenure-track or working towards one, with familial responsibilities, that usually include young children, makes life stressful for assistant professors

Considering the professors were tenured, a point of discussion would be that, why only a small percent indicated satisfied? Could it be that the past experience of these professors influenced their response to this question? Another possibility would be that these tenured professors were witnessing the current junior faculty's struggle, who are also probably being mentored by them. Nonetheless the equal distribution across the satisfaction scale clearly indicates the spread out opinion about the cohort, the frustration of this group with meeting tenure requirements and balancing family life.

Towards the end of the global satisfaction section of the questionnaire, the variable of OVERALL JOB SATISFACTION was included. This variable captured the job satisfaction of the women faculty with respect to the global aspects of their work such as benefits, professional relationships with other faculty, teaching related responsibilities, lab space, etc. The data was analyzed in different ways that included women faculty's rank, status, and highest degree held. Overall, a high proportion of women faculty were satisfied with the above mentioned aspects of their job. This variable, by no means, declares the faculty's high satisfaction levels with the pressures of research, work-life balance, overall sentiment about academic medicine and the University of Pittsburgh.

## 5.5 FACTORS CAUSING PROBABLE ATTRITION OF WOMEN FACULTY

The main focus of this case study was the reasons why female faculty would leave the institution or academic medicine, if they chose to do so, in the future. The factors that would affect that decision was important to identify; as it was not possible to contact women that have already left the institution or academic medicine altogether, various studies have found turnover intentions are a good proxy for actual turnover (Lee & Mowday, 1987; Tett & Meyer, 1993). Apart from identifying the factors of leaving, the percentage of faculty that would choose to leave would also add value to the study in a way that determines their feeling towards academic medicine and the University of Pittsburgh. Usually attrition occurs at all ranks, but attaining tenure substantially decreases the rate of attrition. The junior faculty are more prone to drop out, especially those who have not been awarded tenure since attaining tenure substantially decreases

the rate of attrition. Though not all new academics will choose to stay in academia, nor be part of this university, and not all will be able to attain tenure, the aim should be to retain the talent and help them succeed in their career choice.

For this study the faculty, who intend to leave, can be referred to as "potential dropouts". The following questions were used to help identify the main reasons that would influence the intention of leaving and at the same time capture the number of faculty that, if given a choice would leave the University of Pittsburgh and/or academic medicine: (1) Asking the faculty their overall sentiment about academia and their intent to stay or leave; (2) In the past five years their intent to take up a position outside the University of Pittsburgh; (3) In the next five years their intent to take up a position outside the University of Pittsburgh; (4) If they decide to resign, of the three given choices, which would they chose to do so; (5) Rank the top 5 reasons to leave the University of Pittsburgh; (6) Rank the top 5 reasons to leave academia; and (7) If they were to begin their career again would they choose the University of Pittsburgh; (8) If they were to begin their career again would they choose academic medicine.

The OVERALL SENTIMENT TOWARDS ACADEMIA was captured using the answer choices 'Satisfied with academic medicine and would not leave, satisfied with academic medicine, but would still leave, dissatisfied with academic medicine but would not leave and dissatisfied with academic medicine and would leave'. Across the answer choices a clear trend was seen, with the percentage of faculty going down from being 'satisfied with academic medicine and staying' to 'being dissatisfied and leaving'. A fair amount of faculty indicated being 'satisfied and not leave' academic medicine. The majority of the professors fell into this category and proportionally not as many junior faculty voted for this choice. It is expected that,

being tenured or having contract renewals that done with ease, the higher percentage were of the professors rank.

The answer choice 'I am satisfied in academic medicine but would leave' was closely examined since it described that even though the faculty was happy in academic medicine they were looking for something more in their career. The instructors are the lowest in the rank and have some ways to go before, if at all, they attain a tenure-track position. So their frustration is very obvious looking at their response rate. Even though the respondents comprised of a mixture of tenured, tenure-track and contract employees; being on a tenure-track and/or being tenured does not make the faculty dedicated towards academia, they would still like to explore other possibilities. The common thought would be the reason why, despite of being in this position, these women faculty chose to leave academia? For these 73 respondents their responses for leaving academia in the next five years were obtained, and the three top preferences were 'better opportunity elsewhere', 'pressure to get funding', and 'low salary'. Similarly, for 'I am dissatisfied in academic medicine and would leave' the same three reasons were stated. 'Better opportunity elsewhere' is an element that includes leaving in order to secure a position with higher rank, visibility or responsibility or go to an institution with more prestige. Pressures related to funding will always be present irrespective of the rank or department a faculty belongs to; and since faculty who perform research, fund part of their salary through research monies would find low salary as one of the major factors. Another factor to note here, is that these women faculty, if they were working in a non-academia setting, would draw higher pay-scales (Autry, Irby, & Hodgson, 2007).

One of the key questions asked in the survey given for this study, was for the faculty to rank their five top reasons to LEAVE ACADEMIC MEDICINE in the next five years. As

expected the top five reasons were ‘ better opportunity elsewhere’, ‘low salary’, ‘pressure to get funding’, ‘high work load’, and ‘poor career advancement opportunities’. It could be assumed that since the institute had poor career advancement opportunities, the faculty would look for better opportunities elsewhere. Salary, as discussed earlier, for academicians are part substituted by the research monies obtained by the funding agencies and the pressure to get funding also indirectly affects the salary a faculty makes. When a faculty has research, teaching, service and clinical responsibilities to perform, the work load would be high, creating dissatisfaction with academic medicine and/or the institute. The finding of the sentiment towards academic medicine, was clinched by the question that asked the faculty if they ever got a chance to BEGIN THEIR CAREER AGAIN, would they choose academic medicine; a surprising 41% voted ‘definitely yes’, followed by 45% voting ‘probably yes’. The graph showed an obvious correlation between the ranks and the response choices of ‘definitely yes’ and ‘probably yes’. Interestingly the percentage of respondents increased from instructors to professors for the ‘definitely’ response, and decreased from instructor to professor for the ‘probable’ response stating that there were more number of professors that would definitely choose academic medicine, and more number of instructors that would probably choose academic medicine. A very small percent of junior faculty felt they would probably not choose academic medicine again; these consisted of the assistant and associate professors only.

These results bode well for academic medicine, specifically for the cohort that makes up the sample of this study. Despite the fact they are unhappy with the pressures of obtaining funding and the high workload makes the profession even more difficult, most of the women faculty would choose to work in academic medicine. It is to keep in mind that this is specific to

the women faculty surveyed at the University of Pittsburgh, and may not be applicable towards cohorts at other comparable institutes.

Another aim of this study was to determine the intention of the women faculty leaving the University of Pittsburgh and gather the potential dropout reasons if they chose to do so. The survey captured their intentions over a span of ten years, broken up by their intentions of leaving the institute in the past five years and the next five years. Surprisingly, in the last five years, 71% of the respondents considered leaving the University of Pittsburgh, and thus the results were statistically significant. On an individual faculty rank basis, a trend for departure shows the assistant professors and associate professors are inclined higher to leave than the professors. Interestingly, in the next five years the same trend is not seen in the total group of faculty. An equal proportion voted for both 'yes' and 'no' regarding their intentions to leave the university. Proportionally, in the next five years, though the overall percentage of potential dropouts are reduced to 52%, the individual ranks show the similar trend as observed for the past five years which is a higher number of junior faculty intend to drop out. But since distribution is equal of the overall faculty, it can be assumed that they foresee themselves progress far enough in their career at the University of Pittsburgh, that leaving might not hold many benefits. The 10 year span usually entails being vested, promoted, and settled in, etc.

Tenure and tenure-track seem to have no influence on the intention to leave, as most of the respondents were either on tenure-track or tenured. Many of the junior faculty are active in the job market during the length of the tenure-stream service, and there could be opportunities out there that may tempt the faculty to move even if a favorable tenure decision is reached and/or counter offers given that may have leverage. For the tenured professors, the possibility of retirement from academia is also a major reason to leave the university, but taking up another

position that would enhance their status would also be a key factor. Even if the faculty decides to resign, the majority of them felt it would be for TAKING UP ANOTHER POSTION WITHIN ACADEMIA; this also directly relates to the top choice of leaving for better opportunities elsewhere. The job prospects also include the possibility of finding options outside of academia, which almost one-third of all faculty ranks felt could be another reason to resign from the University of Pittsburgh.

The five main reasons to leave the university were identical to the reasons chosen for leaving academia, though the orders of the choices were a little different. Better opportunity elsewhere, high work load, low salary, pressure to get funding, and poor career advancement opportunities were the top five factors that influence attrition from academic medicine and the University of Pittsburgh. The key question that asks the faculty if they would pick University of Pittsburgh again, received mixed responses. Overall, the faculty was moderately in favor of returning back to the University of Pittsburgh. Closer analysis revealed that proportionally not many faculty felt they were absolutely sure of coming back. The professors seemed more inclined to return, than the junior faculty. The proportion of those who were moderately in favor of returning, were equal across the ranks; the exception seen were the instructors who were more inclined of not coming back. It is to be noted that tenure-track and renewal of contracts play a major role in continuation at an institute, combined with overall experience of the faculty. Going through what a faculty is experiencing in the current setting, in retrospect she would not want to put herself through it again. The data clearly showed that, although the women faculty are satisfied with academic medicine as a whole, they are somewhat frustrated with certain factors of the university.

# 6.0 SUMMARY OF SIGNIFICANT FINDINGS

The goal of the University of Pittsburgh is to retain its women faculty by preventing attrition of these highly skilled, intelligent and hardworking women. The dissatisfaction of an institution's workforce causes a faculty to find better opportunities at other institutions or move to private practice(Borges et al., 2012). A person would compromise only to a certain extent on various variables affecting their happiness at their workplace; after which they might seek alternatives. The junior faculty is the most affected population, consequently falling prey to the stress, related to academic medicine.

The various constructs used in this research helps to understand the women faculty's needs, expectations, and satisfaction with academic medicine, and more so with the University of Pittsburgh. The main focus of the study was to identify the reasons why women in academic medicine would potentially drop out from academia, and being a case study, from the University of Pittsburgh. Each variable reflects knowledge gained by the study of the literature and various schema presented by different researchers. The summary of all the variables, valuable for the analysis of the theoretical framework, is given below:

1) The organizational or environmental factors are a major section influencing the job satisfaction, though the salary that the faculty made and the opportunities given,

regardless of gender, had no influence on their satisfaction levels. But the variables that were relevant were-

a. Mentoring:
    i. Quality of mentoring: The junior faculty was clearly dispersed between the satisfaction scales; 'satisfied' was not the definite choice of the instructors, assistant and some of the associate professors.
    ii. Personal interaction with tenured faculty: Across all ranks, higher percentage of faculty was satisfied with their personal interaction with tenured faculty in their respective departments.
    iii. Departmental leadership: A clear trend indicated satisfaction with departmental leadership.
b. Faculty development:
    i. Collaborative opportunities with other faculty: A large percentage of faculty were satisfied with collaborations with their peers and colleagues.
    ii. Pace of professional advancement: In a person's career, the speed of their professional progress is an essential part of their growth, especially if the person is new in the field or a junior ranked professional. In academic medicine, the junior faculty is always anxious about the speed their professional life would move at. Being on tenure-track, attainment of tenure, promotions, renewal of contract, are all milestones that every faculty expects to cross or meet in their work life at the University of Pittsburgh. A high proportion of junior faculty show dissatisfaction and neutrality with their speed of professional advancement. Some senior faculty have expressed disappointment towards their

pace of advancement with respect to change of duties with seniority; their clinical call obligations remain high and do not match their job descriptions. One of the examples provided by a participant was the several number of hours spent on clinical education and had none allocated towards teaching responsibility.

iii. Prospects for career advancement: The trend for this was obviously related to the ranks of the faculty. The plans that the junior faculty foresee for their career path clearly showed more dissatisfaction and neutrality. It is to be noted that the junior faculty who are unsuccessful in attaining tenure, usually leave the university within the next year, either voluntarily, or are compelled to do so by a terminal year contract. Sometimes, the assistant /associate professors elect to leave the tenure-track career path and take up an off-track position. This uncertainty of the future creates an additional layer of stress for the women faculty. Requirements for the promotion could be difficult to meet considering the clinical work load and pressure from the hospital administration. A mid-level faculty member stated, "Career advancement for clinical faculty is very difficult. Promotions to the higher faculty rank are difficult as there are no clear guidelines... Clinical research is difficult given the time restrains and work load. Teaching does not seem to have important role or factor for the promotion."

iv. Opportunities for professional development: To facilitate career advancement and help build learned faculty, every institute of learning encourages its faculty to integrate and scaffold knowledge by encouraging professional growth. The junior faculty ranks were somewhat satisfied with the opportunities provided by

the university, though a substantial percentage of junior faculty seemed neutral about it. The University of Pittsburgh Office of Academic and Career Development (OACD) provides multiple professional development opportunities, of which some are only for women. Interestingly, it was observed that as the ranks increased from the lowest rank, i.e. the instructors, to highest i.e. the professors, the awareness of these programs increased. Usually, the intuitive way would be, the junior ranks should be more aware of these programs as they are the group that has to rise through the ranks to attain full-professorship. For many faculty it is difficult to take advantage of professional development opportunities because of time constraints, even if they are aware of them.

v. Recognition given by the Chair for exemplary work: human nature looks for approval for a job well-done. In a person's work-life the superior administrator, (in academic medicine being the Chair), is the person you look towards when you would like to be appreciated for accomplishments. Most of the junior faculty were neutral towards their respective Chair giving recognition for the work that the faculty was doing. It is possible that the respective Chairs are not doing enough to honor the effort put in by the faculty, or a lack of communication is present in certain departments. Some of the sentiments could be echoed by a comment provided by a mid-level faculty member, "I feel that some department chairs only execute what the administrators tell them to do without paying attention to the needs of the faculty members and without truly listening their vision… I am hoping that we soon find department chairs that

brings the true values back and give us an opportunity/ environment to work on our research projects to succeed. I do not want to see myself leaving the University of Pittsburgh because of a department chair`s lack of leadership."

2) Research funding: The stress of obtaining research funding, at a time where funding is highly competitive, is well known to all faculty. Institutions are pressuring faculty and introducing clauses where each faculty is required to obtain a certain number of grants to ensure a position at the institution. For every grant that is acquired, the faculty has to pay a certain percentage to the university, in order to accommodate internal as well as institutional requirements. The clear dissatisfaction across every rank, demonstrates the frustration experienced by the faculty regarding the expectations, of the institute, to find research funding.

3) Internal factors are variables that the faculty may have some control over, but could be also heavily dependent on environmental factors or institutional elements.

   Work-life imbalance: To manage a successful career and a healthy home lifestyle is the most challenging situation to be in. One of the things observed, which could relate to finding better opportunities elsewhere, is the benefits provided for full-time versus part-time faculty. Because sometimes losing those benefits (by being part-time), forces the faculty to stay full-time even if they would prefer to work part-time. A quote from the survey sums the feelings towards this balance:

   > I am concerned by the lack of full faculty benefits for individuals who are not working at 100% FTE. Faculty benefits such as good retirement plans and tuition benefits are one reason we choose academic medicine. At other institutions, full benefits remain in place for part-time faculty. This is especially important for

women faculty, especially mid-career, when we are rearing our children. Balancing personal/professional life is something we are supposed to role-model for our learners. Those of us who balance our personal lives during busy seasons of life by working fewer hours should not be penalized by losing full faculty benefits.

The faculty seemed to be highly satisfied with the flexibility provided by the University of Pittsburgh. The other variables that made up the work-life balance were responded to in a different way.

i. Support system provided for childcare: Typically, junior faculty have young families; and arranging affordable and safe child care options can be a challenge. Combining this in the early years of faculty career, in academic medicine, proves to be highly taxing, especially for women. The University Child Development Center is the only childcare option available on campus, and has a lengthy waiting list that can range up to five years; to make things even more complicated the childcare is provided till preschool age. It is to be noted that most kindergartens in the area are half-day. The University of Pittsburgh Medical Center (UPMC) has a tie-up with a local daycare center that has a full day kindergarten program. But the rates for these facilities are very high, making it a financial strain. The frustration is obviously noticeable in the level of dissatisfaction which was prominently high for all the faculty ranks at the University of Pittsburgh.

ii. Ability to balance professional and personal time: A healthy balance of work and home life usually leads to a productive career. This variable is reflective of

the ability of the faculty to balance one aspect of their life without compromising the other. The data showed the junior faculty being most affected, since, again, it is dependent on the household commitments and the career path. The pressure to have two successful paths, one home and the other work, can cause anxiety in the faculty's life.

iii. Having children and tenure-track compatibility: The length of tenure stream service can range from 7 to 10 years or so, depending on what job responsibilities the faculty has. During this time, women of childbearing age usually would think of starting a family. When a faculty member takes family leave, the University provides an option of not counting the year towards the mandatory tenure review, if the faculty so wishes and on approval from higher administration. But just getting a waiver of an extra year is certainly not enough. The time spent in raising a young family and at the same time creating a strong portfolio is an enormous task. The evident dissatisfaction among the assistant professors is visible in the data, and the instructors and associate professors are not that far behind. Surprisingly quite a few professors were dissatisfied too, and that could be reflective of the extent of discontentment felt by the faculty members regarding this variable.

4) Factors causing probable attrition of women faculty: One of the main focuses of the study is to find the percentage of potential dropouts and the reasons why they would choose to leave academic medicine and the University of Pittsburgh. Various questions captured the intent to leave, and the proxy measures provide a 'heads-up' to the institution regarding the possibility of attrition of certain faculty.

a. Sentiment about academic medicine: provides the level of satisfaction with the intent to stay or leave academic medicine, as one faculty member states "Academic medicine is tough career choice with many challenges but many rewards. It is not for the faint of heart. I have concerns that the system will have to change, the next generation will need to adapt different work strategies or expectations will have to change." The data gave a lot of information about the sentiment of the faculty members. On analyzing each professorial rank individually, it was not surprising to observe that a large number of full-professors seemed to be satisfied and would not leave academic medicine. But, the rest of the ranks stayed between the range of thirty and forty percentage. A clear trend was seen for the faculty that indicated being satisfied with academic medicine, but would still choose to leave. Highest number of instructors fell in this category and a fairly high number of assistant and associate professors; and a small percentage of professors also voted for this classification.

It was interesting to see that the uppermost reason for this group of faculty, to leave academic medicine, was to find better opportunities elsewhere. The pressure to get funding and low salary were the other two reasons, as felt by a senior faculty member who commented that "for the first time in my career of… the pressure to get funding has caused me to consider leaving academic medicine"; another senior member stated "… if I were to start my career now I would not choose academic medicine, as much as I love mentoring students and doing research. The pressure to fund the majority of one's salary is incredibly stressful and I can't imagine spending even more than my 60 hr (hours) week working to secure funds to pay my salary."

These responses coincided well with the faculty members top five reasons, 'better opportunity elsewhere, low salary, pressure to get funding, high work load, and poor career advancement opportunities', of dropping out of academic medicine totally, if they chose to do so, in the next five years. High work load is created when there is pressure to find grant monies from various funding agencies. Publishing in high impact journals is encouraged and sometimes required for tenure portfolios and also help with grant proposals. The term 'publish or perish' is a very real-life occurrence, and academic medicine can be merciless on the faculty's career path. If the faculty does not have enough publications, then providing substantial support towards obtaining grant monies can be difficult and if the faculty does not have enough funding then publishing meaningful research is challenging, thus creating hindrances in career advancement. In comparison, private practice gives more flexibility as well as better financial benefits for medical professionals (Bluestone, 1978; Borges et al., 2012). Workload has the potential of being less, and there is no pressure of obtaining funding because conducting any kind of research in private practice is either optional or not required.

Since the questionnaire did not ask the faculty's reasons to stay in academic medicine, even if they were dissatisfied, it makes it difficult to deduce the factors that would influence them to do so. Even with all the issues experienced with academic medicine, when the faculty was asked about their re-choosing academic medicine, surprisingly 45% of the total faculty definitely would come back to academic medicine, and 41% probably would re-select.

b. Sentiment about the University of Pittsburgh: A large number of junior faculty reported having thought of taking up a position outside the University of Pittsburgh in the past five years. The highest potential dropouts would have been the assistant and associate professors; with the instructors and surprisingly many full-professors, not far behind. The numbers went down slightly when they responded to their intent to leave the university in the next five years. This is an important group of people, since they are the potential dropouts from the University of Pittsburgh. The decisions could be based on various reasons as stated in the previous sections. The possibility of moving out of the area, looking for better opportunities elsewhere, which could include joining another institution, or moving to private practice, uncertainty of tenure attainment, termination of contracts, possibility of retirement for senior faculty, could be the various driving factors. The trend shows the junior faculty more or less around similar percentage of potential dropouts, with the numbers going down slightly as the graph moves from lower to higher ranks.

As discussed in the earlier section, women faculty overall seem contented with academic medicine, hence it is not surprising that 60% of the faculty would resign from the university to take up another position within academia itself versus about 34% who would leave to take up options outside of academia. The reasons for dropping out of the University of Pittsburgh were also ranked the same as for academic medicine; which is expected since the institute is a research one university and what applies to academic medicine also applies towards the university. Though what is of greater concern, is, that the top picked reason to leave the university is for better opportunities elsewhere, which indicates that even though SOM ranks 18$^{th}$ in

the country, the faculty is not contented with their situation and would rather find some other kind of job opportunity. This could indicate that maybe due to the poor career advancement opportunities at SOM, women faculty would look for better pay or promotions at a higher ranked university. In the end, this thought by a faculty member sums up the sentiments, at least for some women faculty members, towards the University of Pittsburgh:

> Of the three academic medical centers where I have trained and been faculty, Pittsburgh has been the most retrogressive as far as the institutional and cultural tolerance for unprofessional behavior from male colleagues. While this is rarely classically sexist in terms of attention to appearance, untoward sexual advances, etc. -- what I observe is arrogance, dismissiveness, outbursts, and power-wielding among several institutional leaders. Further, I observe frequent marginalization of our female talent despite positions of leadership. We need more women leaders in science and academic medicine, but the culture is also sadly permissive of marginalization and does not take full advantage of the talented female faculty we do develop or recruit.

# 7.0 CONCLUSION

Maintaining strong faculty, faculty turnover and attrition are a vital concern of academic administration at institutes of higher education. This case study examines the various factors related to job satisfaction of the women faculty at the University of Pittsburgh, School of Medicine; it also provides insights to the reasons that would cause potential dropouts. Why do we need to study this? The university has changed over the last 30 years; the expectations of the administrators as well as the faculty have changed, the funding situation has become worse, the population growth in the area has increased patient load, pressures to perform have increased many fold, privileges have gone down, and competition has gone up. A senior tenured faculty member stated

> I think overall that the University of Pittsburgh has been a very supportive environment for me up to this point… I never felt that I was treated differently because I was female. I think early on, our salaries were very low, but that did improve over time… I now feel that the focus is shifted to hours spent in clinic rather than overall productivity. I think that with the changes coming…, and budget cuts in our department, the future may be very different.

Another faculty member stated “I greatly enjoy my job, my colleagues and mentees are fabulous but work load, lack of security, pressure to get funding and low salary are big negatives”. These sentiments of currently employed women faculty cannot be disregarded.

At the first glance the job satisfaction seemed high for all faculty together, but on closer inquiry the individual ranks showed up significantly different. The trend indicated the junior faculty was not as satisfied as the senior faculty; as supported by the research literature, the junior faculty is at a higher risk of being the potential dropouts. This indicates that the declining numbers of women in academic medicine is not a “hiring” issue, but more likely a “retention” issue. The causes for women not succeeding at the same pace as men include a complex combination of women’s choices, sexism, the glass ceiling effect, salary inequity, lack of mentoring and leadership opportunities; and internal factors such as constraints in combining family obligations with professional responsibilities, attitude and perception, cultural stereotypes (J. Goldstone & R. Goldstone, 2000). Family-unfriendly obstacles, such as tenure-clocks that coincided with child-bearing years, traditions of holding early and late meetings, lack of part-time tenure-tracks; and institutional policies that disregarded children and parental and family leaves made life unpleasant for young women faculty working at research one institutions (Osborn et al., 1992; Pell, 1996). Childcare has also been identified as an important limiting issue on the ascendancy of female clinical researcher physicians-in-training (O’Hara, 2009).By examining all the aspects captured by this case study, the conclusion drawn is twofold, and in a lot of ways the factors are related but distinct:

1) Reasons of overall dissatisfaction with being at the University of Pittsburgh were-

a. Faculty development: For the career advancement of faculty, irrespective of rank, the below mentioned four reasons, individually or combined, influenced the satisfaction of being at the University of Pittsburgh:
    i. Pace of professional advancement
    ii. Prospects for career advancement
    iii. Opportunities given for professional development
    iv. Recognition given by department leaders
b. Work-life imbalance: Balancing a normal functioning family and professional life is already a challenge to begin with, and the limitations provided by the below mentioned factors, makes it even more overwhelming for women faculty:
    i. Lack of reliable support system for childcare
    ii. Ability to balance professional and personal time
    iii. Family life while being on tenure-track

2) The main reasons for leaving the University of Pittsburgh were-
    a. Better opportunities elsewhere
    b. Funding
    c. Poor career advancement opportunities

The three reasons for leaving the university are interrelated, to a certain extent. It is to be noted, that institution specific regulations and requirements govern salary allocations, the amount and kind of funding attainment, guidelines for promotion and advancement. It is possible that the University of Pittsburgh's requirements of their faculty is excessive, hence creating high demands on the women faculty. The funding attainment specifics which include, among other things, a large portion of the monies given to the university, cover the overheads as well as

salaries, could be less stringent at other comparable institutes. Institutes that appear to have moderate requirements could be attractive for some women faculty and would be a cause for a move for better opportunities. Career advancement is dependent on various factors among which amount of funding a faculty carries, time devoted to professional development (which can be reduced due to clinical responsibilities) and guidance provided by departmental leadership.

In summing up, the University of Pittsburgh did show a drop in rate of departures (as reported by (Jolliff et al., 2012)) from nine percent in 2009 to four percent in 2011. But changes in the functioning of SOM in the last four years, especially in clinical responsibilities and funding being tight has caused some unrest among the women faculty. Clear levels of dissatisfaction in certain areas and high level of junior faculty potential dropouts indicate possible departures from SOM, University of Pittsburgh. If certain measures are undertaken early on, it would be possible to retain the potential dropouts in the future, and benchmarking reports released in the next few years, on women departures, would hopefully see the numbers either remain steady at four percent or go down further.

# 8.0 IMPLICATIONS FOR POLICY AND PRACTICE

Hence, what should be done? As supported by literature, the current population of academic women is smaller, tends to advance more slowly, and is inclined to leave academia more frequently. The findings in this study can make important contributions to curb unwanted attrition among women that are already employed by the institution. This case study hopes to provide some ideas to help stem unwanted attrition and to encourage higher rates of tenure and promotion among women. These suggestions can be initiated at the departmental level, school level, and/or university-wide.

**Forming departmental climates favorable for success**

The role of the department leaders, like the Chair, is immensely contributory in creating an environment beneficial to faculty.

- The role of the Chair should be more supportive and cooperative to the faculty, instead of plainly working in the institution's favor;
- Active effort needs to be given by the Chair to recognize each faculty's hard work in their departments, and acknowledge their success;
- Develop assessable ways to measure departmental climate and hold the Chair accountable;
- Biyearly meetings with all faculty instead of just once a year at annual evaluations.

**Revise and improve tenure process/contract process**

As discussed in the previous sections, the tenure process is an ongoing problem with junior faculty as there are multiple problems associated with it. These problems could be related to various things like unclear or unrealistic criteria or guidelines; unhelpful, insufficient or conflicting feedback from senior faculty and/or the chair; the required versus the expected/actuality allocation of responsibilities and how it shows up during the tenure review process.

- For the duration of tenure-track frequent feedbacks and check-ins would help provide direction to junior faculty;
- Coach new faculty on how to prepare for tenure review;
- Those on contract should have more sense of job security instead of worrying about termination of contract that would lead to putting effort towards finding another job;
- Update policies and procedures to reflect current conditions in academia.

**Funding options**

- Departments must investigate various alternatives for research funding sources, instead of directing faculty solely to the federal funding sources;
- Train grant support personnel to be compassionate.

**Gather feedback and use suggestions**

- University of Pittsburgh should be a leader instead of following the lead. To enable the governance to do so, it is important to work closely with AAMC and implement yearly job satisfaction surveys to gather information on where faculty satisfaction levels stand.

Using the data obtained, make changes to help retain faculty by using suggestions from the faculty.

- Provide opportunities for all faculty to offer input on departmental matters, even if decision making power is not conferred upon them. Making the faculty inclusive creates a sense of belonging.

**Training programs and use of technology**

- Advertise and create more awareness of the OACD programs;
- Provide seminars and meetings for professional development over multiple days, including weekends and open up options for attending them online;
- Women with children find it difficult to attend early morning or late evening seminars and workshops. Provisions should be made, for example, the adjustment of schedules, to incorporate faculty development forums/seminars/discussions during normal working hours;
- Increase in the number of faculty that are sent to professional development programs, like ELAM, that are held at other institutions.

**Extra support and encouragement**

- Expand childcare options, and provide after school care;
- Implementation of career development and work-life programs that are not only formal policies, but are actually implemented and accepted institution wide;
- Encourage participation in governance opportunities.

The message for the institution is to strategically plan to improve and formalize professional and leadership development; work-life balance policies, programs, and practices in order to enable as well as sustain the internalization of contentment among women faculty.

## 9.0 LIMITATIONS OF THE STUDY

1) An obvious limitation is that the questionnaire was administered only at one higher education institution. Better results can be obtained if the study is expanded to women faculty at more institutions either locally or nationally.
2) Another significant limitation was the absence of male faculty from the survey cohort. Though the design of the survey was created to capture women faculty's satisfaction rates and potential dropout reasons and rates.
3) The neutral spectrum of the satisfaction scale is hard to analyze as it portrays the 'indifference' or 'no opinion' of the respondent. If the 'indifference' is given a score of zero, then the average score would be affected by it. Omitting the 'neutral' answer choice biases the data to be in favor of either of the other two answer choices of 'satisfied' and 'dissatisfied'. Since the responses were based upon the recollection ability of individuals, respondents might have forgotten certain instances that may have occurred in the past and hence do not include that in their responses.
4) As the questionnaire was close-ended, the survey did not provide an opportunity to collect in-depth information. Only one section allowed faculty to provide additional comments.

# 10.0 RECOMMENDATIONS FOR FUTURE RESEARCH

The ultimate goal of any institute of higher education is to retain its faculty, since a lot of effort and monetary resources go into the hiring process, and once trained, losing a valued faculty can be a setback to the department. Hence, additional research is recommended to improve the understanding of the decisions taken to leave positions in the university.

**Inclusion of men**

It would be beneficial to study attrition rates and reasons for male faculty, and do a comparative analysis between male and female faculty. The study would reveal information on gender bias, the difference between attrition rates, and rates of tenure attainment and promotion.

**Follow up of those who left after 5 years**

Respondents that might leave the university for reasons other than retirement and death, should be further examined, especially for the faculty that were on tenure-track or tenured, given that tenure-track jobs are hard to obtain.

**Exit interviews**

When a faculty decides to resign from the University of Pittsburgh, an exit interview should be conducted a week or so before the last working day. The reasons for leaving, captured during this phase, would be reflective of the true reasons of departure.

**Focus on clinical responsibilities**

A clinical workload specific questionnaire would help obtain specific responses towards attrition and clinical responsibilities of women faculty.

**Include other comparable research one institutions**

Comparative analysis with institutions, that are similar in size and rank, would help in institution specific findings. These could include the presence of the geographic location of the institute on faculty, benefits at each institute and the satisfaction related to it, tenure practice, gender bias, etc.

## APPENDIX A

## ACADEMIC MEDICINE FACULTY JOB SATISFACTION SURVEY

Q1 What is your present academic rank?

- ❍ Professor
- ❍ Associate Professor
- ❍ Assistant Professor
- ❍ Instructor
- ❍ Other rank _____

Q2 What prefix does your rank have?

- ❍ Research
- ❍ Clinical
- ❍ None

Q3 What is your status at this institution?

- ❍ On tenure track, but not tenured yet
- ❍ Tenured
- ❍ Non-tenure (contract)

Q4 At the University of Pittsburgh:

- ❑ Full-time
- ❑ Part-time
- ❑ Only clinical faculty
- ❑ Only non-clinical faculty
- ❑ Both clinical and non-clinical responsibilities

Q5 Please write the most appropriate answer for the following:

Highest degree held (please enter MD, Ph.D., MD and PhD, etc.)
Area of concentration of highest degree held (for example genetics, microbiology, biochemistry, surgery, pediatrics, etc.)
Department of primary faculty appointment
(Optional Question) Division of current faculty appointment.

Q6 Which of the following responsibilities do you perform (select all that apply to you), and estimate the percentage effort dedicated to each:

- ❑ Research _____
- ❑ Teaching _____
- ❑ Service _____
- ❑ Clinical responsibilities _____

Q7 Please answer to the best of your ability for each of the following occurred:

Number of years at University of Pittsburgh
Year of last promotion (e.g. 1989, 2001, etc.)
If tenured, year tenure was awarded (e.g. 1989, 2001, etc.)

Q8 Are you currently:

- ❍ Single
- ❍ Married
- ❍ Unmarried, living with partner
- ❍ Divorced
- ❍ Widowed
- ❍ Separated
- ❍ Prefer not to answer

Q9 Are you: (Mark all that apply)

- ❍ White
- ❍ African American/Black
- ❍ American Indian/Alaska Native
- ❍ Asian
- ❍ Native Hawaiian/Pacific Islander
- ❍ Hispanic
- ❍ Other _____
- ❍ Prefer not to answer

Q10 Do you have children:

- ❍ Yes
- ❍ No
- ❍ Prefer not to answer

Answer If Do you have children Yes Is Selected

Q11 How many children do you have in the following age ranges? (Enter responses: 0, 1, 2, 3, 4+)

5 years and under
6 to 10 years old
11 to 15 years old
16 to 18 years old
Over 18 years

Q12 For the following questions, ask yourself “how satisfied am I with the following aspects of my work"

| | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied | N/A |
|---|---|---|---|---|---|---|
| Salary | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Health benefits | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Retirement benefits | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Quality of students | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Freedom to determine course content | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Autonomy and independence | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Professional relationships with other faculty | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Social relationships with other faculty | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Competency of colleagues | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Level of respect given for the expression of diverse values and beliefs | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Departmental leadership | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Level of opportunities given to all faculty | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | | | | | | |
|---|---|---|---|---|---|---|
| regardless of their gender | | | | | | |
| Quality of facilities like office/lab space | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Clerical and administrative support provided by the department to help the faculty with paperwork, ordering supplies, scheduling, etc. | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Job security | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Other | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Overall job satisfaction | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Q13 For the following questions think about your career advancement and promotion possibilities, and please indicate your level of satisfaction with the following:

| | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied | N/A |
|---|---|---|---|---|---|---|
| The department provides opportunities to collaborate with other members of your department | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| The pace of your professional advancement at the medical school | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| The opportunities for professional development provided at the medical school | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Recognition given by the Chair for exemplary work | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Prospects for career advancement | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| The amount of research funding you are expected to find | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Q14 For the following questions think about formal and informal mentoring opportunities provided by the department, and please indicate your level of satisfaction with the following:

| | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied | N/A |
|---|---|---|---|---|---|---|
| Quality of your mentoring experience | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Value placed by department faculty on your work | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Amount of personal interaction with tenured faculty | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Q15 For the following questions think about the flexibility, childcare or elder care, and pauses in the tenure clock opportunities provided by the medical school and please indicate your level of satisfaction with the following:

| | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied | N/A |
|---|---|---|---|---|---|---|
| Flexible working hours | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Tuition waivers, remission or exchange | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Support system provided for child care/elderly care | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Ability to balance professional and personal time | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| Having children and tenure track compatibility | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Q16 Overall sentiment about academic medicine. Please select one:

- ❍ I am SATISFIED in academic medicine and would NOT LEAVE
- ❍ I am SATISFIED in academic medicine but would still LEAVE
- ❍ I am DISSATISFIED in academic medicine but would NOT LEAVE
- ❍ I am DISSATISFIED in academic medicine and would LEAVE

Q17 In the past five years have you considered (within academia):

| | Yes | No |
|---|---|---|
| Taking up a position outside of University of Pittsburgh | ❍ | ❍ |
| Taking up a position outside of the city of Pittsburgh? | ❍ | ❍ |
| Taking up a position outside of Pennsylvania? | ❍ | ❍ |
| Taking up a position outside of United States? | ❍ | ❍ |

Q18 In the next five years do you foresee (within academia):

| | Yes | No |
|---|---|---|
| Taking up a position outside of University of Pittsburgh | ❍ | ❍ |
| Taking up a position outside of the city of Pittsburgh? | ❍ | ❍ |
| Taking up a position outside of Pennsylvania? | ❍ | ❍ |
| Taking up a position outside of United States? | ❍ | ❍ |

Q19 IF you decide to resign (i.e. leave your position at the University of Pittsburgh), will it be for:

- ❍ Taking up another position within academia
- ❍ Alternate career options outside of academia
- ❍ Staying at home

Q20 In the next five years, if you decide to resign from your position at the University of Pittsburgh, please drag and drop the top 5 reasons for you to do so:

| Rank 1 through 5 |
| --- |
| _____ Low salary |
| _____ No flexibility |
| _____ Poor benefits |
| _____ High work load |
| _____ Poor leadership |
| _____ No childcare support/facility |
| _____ Poor career advancement opportunities |
| _____ Poor collegiality |
| _____ Lack of peer support |
| _____ Poor professional development opportunities |
| _____ Poor mentorship |
| _____ Pressure to do research |
| _____ Pressure to get funding |
| _____ Better opportunity elsewhere |
| _____ Other |

Q21 In the next five year, if you decide to leave academic medicine, please drag and drop the top 5 reasons for you to do so:

| Rank 1 through 5 |
| --- |
| _____ Low salary |
| _____ No flexibility |
| _____ Poor benefits |
| _____ High work load |
| _____ Poor leadership |
| _____ No childcare support/facility |
| _____ Poor career advancement opportunities |
| _____ Poor collegiality |
| _____ Lack of peer support |
| _____ Poor professional development opportunities |

| |
|---|
| _____ Poor mentorship<br>_____ Pressure to do research<br>_____ Pressure to get funding<br>_____ Better opportunity elsewhere<br>_____ Other |

Q22 Are you aware of the following professional development opportunities provided by your medical school:

| | Yes | No |
|---|---|---|
| Women in medicine and science forum offered by the OACD | ❍ | ❍ |
| Sunrise series session offered by the OACD | ❍ | ❍ |
| Course in Scientific Management and Leadership offered by the OACD | ❍ | ❍ |

Q23 If you were to begin your career again, would you:

| | Definitely yes | Probably yes | Probably not | Definitely not | Not sure |
|---|---|---|---|---|---|
| Choose to work at this medical school | ❍ | ❍ | ❍ | ❍ | ❍ |
| Choose an academic career | ❍ | ❍ | ❍ | ❍ | ❍ |

Q24 Please provide any additional thoughts, comments and/or concerns you would like to share:

# APPENDIX B

## B.1 EMAIL INTRODUCING THE STUDY AND SURVEY

Hello,

You are invited to participate in a job satisfaction survey. Your participation in this survey is voluntary and you are free to withdraw your participation at any time. The survey should take only 10-15 minutes to complete.

This survey has been approved by the Institutional Review Board of University of Pittsburgh. The survey collects no identifying information of any respondent. All of the responses in the survey will be recorded anonymously. As with any minimal risk research, there is always a small risk of breach of anonymity associated with participating in this survey. While you will not experience any direct benefits from participation, information collected in this study may benefit the profession of academic medicine in the future by better understanding the reasons for attrition of women faculty. Higher education administrators are concerned about the faculty job satisfaction, especially regarding women faculty.

If you have any questions regarding the survey or this research project in general, please contact Pooja Gandhi pmg12@pitt.edu or her advisor Dr. John Weidman at weidman@pitt.edu
If you have any questions concerning your rights as a research participant, please contact the IRB of University of Pittsburgh at irb@pitt.edu

By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

Thank you,

Pooja Gandhi, Doctoral Candidate, University of Pittsburgh

Dr. John Weidman, Advisor, Department of Education, University of Pittsburgh

**Follow this link to the**
**Survey:** https://pitt.co1.qualtrics.com/SE/?SID=SV_bCxgq8UGLS2mQol

## B.2 REMINDER EMAIL

Hello,

Last week you received an e-mail inviting you to take a web-based survey on job satisfaction. If you have filled out the survey, thank you!

If you have not had a chance to take the survey yet or is in an incomplete phase, I would appreciate you reading the message below and completing the survey. This survey should take no more than 10-15 minutes to complete.

**Follow this link to the Survey:** https://pitt.co1.qualtrics.com/SE/?SID=SV_bCxgq8UGLS2mQol

This survey has been approved by the Institutional Review Board of University of Pittsburgh. The survey collects no identifying information of any respondent. All of the responses in the survey will be recorded anonymously. As with any minimal risk research, there is always a small risk of breach of anonymity associated with participating in this survey. While you will not experience any direct benefits from participation, information collected in this study may benefit the profession of academic medicine in the future by better understanding the reasons for attrition of women faculty. Higher education administrators are concerned about the faculty job satisfaction, especially regarding women faculty.

If you have any questions regarding the survey or this research project in general, please contact Pooja Gandhi pmg12@pitt.edu or her advisor Dr. John Weidman at weidman@pitt.edu If you have any questions concerning your rights as a research participant, please contact the IRB of University of Pittsburgh at irb@pitt.edu

By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

Thank you,

Pooja Gandhi, Doctoral Candidate, University of Pittsburgh

Dr. John Weidman, Advisor, Department of Education, University of Pittsburgh

**Follow this link to the Survey:** https://pitt.co1.qualtrics.com/SE/?SID=SV_bCxgq8UGLS2mQol

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