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An Evaluation of the Determinants of Job Satisfaction in Canadian Family Physicians

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Abstract

Physicians as a group appear to be satisfied with their work. However, there are some gaps in our current understanding of the determinants that impact the job satisfaction of Canadian family physicians. This thesis examined determinants of family physician job satisfaction using in-depth interviews with family physicians to achieve a broad perspective on their job satisfaction. This was complemented by a multivariate analysis that examined the professional and work-life balance satisfaction of physicians across this country. The findings from this research confirm the significance of a number of factors to the professional and work-life balance satisfaction of family physicians. Novel findings included an overall dissatisfaction with electronic medical record use and increased satisfaction of focused practice family physicians. Addressing the factors that contribute to family physician satisfaction can have a significant impact on physician recruitment, retention and on patient outcomes.

Keywords

Family physician, job satisfaction, determinants of job satisfaction, work-life balance

Dedication

This project is dedicated to my parents, Kuldip and Jo-Ann Malhotra, who have provided unfailing love and support as I have journeyed through these many years of school, training and work.

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Chapter 1. Introduction

1.1 Thesis Overview

This thesis aims to examine job satisfaction in Canadian family physicians and to evaluate the determinants of job satisfaction in family physicians across the country. The first chapter comprises an introduction to the study of job satisfaction and a review of the research available in the field. Chapter two is a qualitative study that elicits determinants of job satisfaction amongst family physicians practicing in Ontario and compares these determinants based on gender. Chapter three is a quantitative analysis of job satisfaction and work-life balance satisfaction in Canadian family physicians. Chapter four concludes with an overall summary of the findings of these two studies and provides guidance for future research in this field.

1.2 Literature review

A literature search using PubMed was initiated from January 1, 1966 to August 9, 2015 for English-language publications using the medical subject headings "job satisfaction" and "physician". The National Library of Medicine exclusively uses the medical subject headings (MeSH) term of "job satisfaction" to define this subject of inquiry[1]. The search yielded 813 articles. A review of the titles and available abstracts narrowed the results to 346 articles. Most excluded articles did not focus on job satisfaction as their main outcome. In addition, articles relating to resident/trainee satisfaction were excluded. A total of 100 articles was reviewed from this list.

An additional PubMed search from January 1, 1966 to August 9, 2015 for English-language publications using the medical subject headings "job satisfaction" and "family physician" or "family practice" or "primary care physicians" found 86 results of which 19 were applicable to our research based on abstract and paper review.

A third literature search using Ovid Medline from January 1, 1946 to August 13, 2015 found 8988 articles related to job satisfaction, 320 of which were related to family physicians. Further restriction to English-language, excluding commentaries and reviewing abstracts and full-text papers for appropriateness narrowed the number to 30. This search was done (despite the overlap between PubMed and Ovid) to ensure no further articles pertinent to this investigation were missed.

A fourth literature search on job satisfaction in general, a search using the term "job satisfaction" was performed on the American Psychological Association PsycNET database. The search resulted in 975 articles, 924 of which had the index term "job satisfaction". The search was further narrowed to 529 articles when the age of included subjects was restricted to workers greater than 18 years old. Review of abstracts and full-text papers further narrowed the list of applicable articles to 105.

After review of the four literature search results, elimination of duplicate titles, and exclusion of articles that were not relevant to this research, a total of 190 articles were fully reviewed in the preparation of this manuscript and these articles formed the framework for understanding of job satisfaction in family physicians.

1.3 Introduction

1.3.1 Job Satisfaction in General

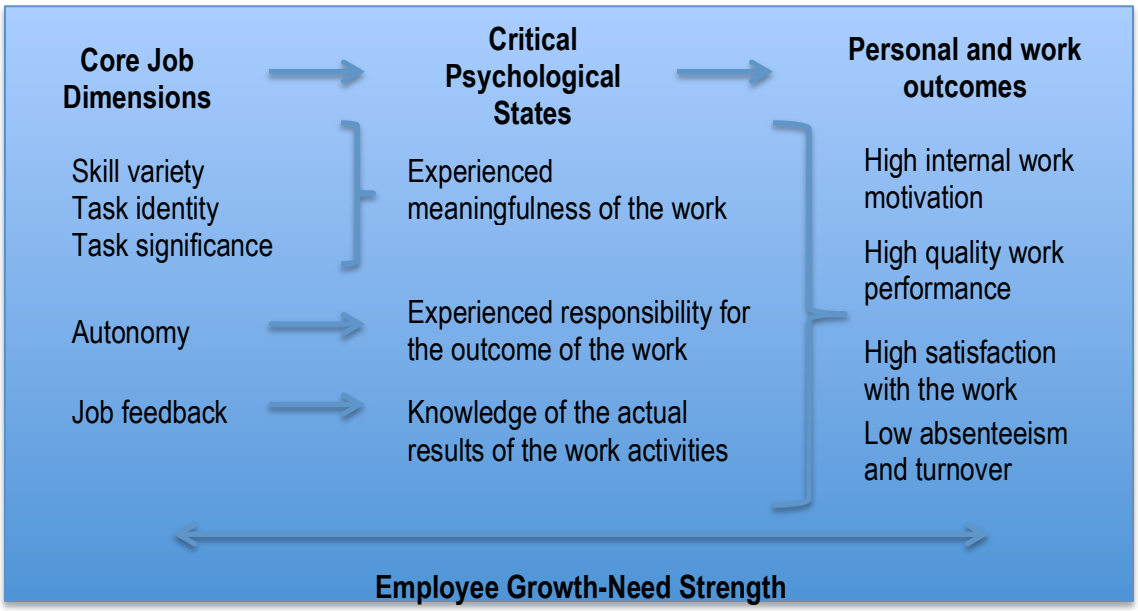
The concept of job satisfaction had its origins in the early twentieth century. Frederick Taylor was an engineer with a keen interest in using the scientific method to improve worker efficiency. His piece on business management, "The Principles of Scientific Management"[2] introduced the idea that an efficient worker is also one who "has acquired a friendly mental attitude toward his employers and his whole working conditions". This novel idea of investigating a worker's mental attitude towards his job opened up a new field of research.

Edwin Locke spent the majority of his academic career studying job satisfaction, and published a definition in 1976 that continues to have significance in modern

psychological study[3]. Locke's definition of job satisfaction was "a pleasurable or positive emotional state resulting from an appraisal of one's job"[4]. Locke's focus on the importance of the affective state of the worker shifted research from operational aspects of the work environment (supervisors, colleagues, compensation, etc.) to the worker's feelings about the environment[3].

In the field of industrial and organizational psychology, job satisfaction is perhaps the most studied element, and attempts to provide an explanatory model for job satisfaction began with Locke and continue to this day. In 1975, Hackman and Oldham proposed the Job Characteristics Model. It was borne out of their Job Diagnostic Survey (JDS) of 658 employees in 62 different jobs and both the JDS and the Job Characteristics model remain important contributions to the field (see Figure 1.1 below)[5].

Figure 1.1: Job Characteristics Model



Hackman JR and Oldham GR, Development of the Job Diagnostic Survey. J Appl Psychol. 1975; 60(2): 159-170, adapted with permission.

Hackman and Oldham identified five core job dimensions: skill variety, task identity, task significance, autonomy, and job feedback[6]. The Core Job Dimensions were linked to three "Critical Psychological States" of the worker: meaningfulness of the work,

responsibility for the outcome of the work and knowledge of the actual results of the work activities. These psychological states would then lead to personal and work outcomes – including motivation, performance, satisfaction and retention. The movement from the core job dimensions to personal and work outcomes is moderated by the individual worker's needs for growth (both personal and professional). They postulated that the employee who has little "growth need" would be less likely to find the core job dimensions important and thus have poorer personal and work outcomes.

This model was a significant step forward in describing job satisfaction and employee motivation, and its core principles remain important in the evolution of the current understanding of job satisfaction and employee motivation[7]. However, there is an appreciation that a plethora of job dimensions and affective states may contribute to job satisfaction in the contemporary worker, and recent research has been more diverse in addressing the specific determinants of job satisfaction that may then fit into the respective models of satisfaction and motivation.

Initial research in job satisfaction arose out of business management theory, and there remains an interest in linking job satisfaction to job performance, which Robert Moorman addressed in 1993. Previous research failed to demonstrate a clear relationship between positive job satisfaction and performance (or "organizational citizenship behaviours")[8]. Moorman distinguished between affective measures of job satisfaction (evaluating the worker's mood while working) and cognitive measures of satisfaction (evaluations of conditions, opportunities and outcomes of the job) in his research[8]. He came to the conclusion that cognitive measures of satisfaction are a stronger predictor of worker productivity than affective measurements[8]. However, his research was clear that the relationship between job performance and satisfaction is complex, and that both affective and cognitive measures play a significant role in describing a worker's behavior.

The five "core job dimensions" of Hackman and Oldham have greatly expanded over the past half century, with a wide variety of factors that determine job satisfaction identified and studied. These range from age and gender to distributive justice, to the internal

labour market[9] to the possibility that there are genetic determinants to personal job satisfaction[10]. Wernimont classified these determinants into intrinsic and extrinsic factors, where extrinsic factors describe those that are external to the worker (environmental factors), and intrinsic factors are those that are generic to the job (type of work, personal rewards)[11].

The Conference Board in the United States conducts an annual survey of five thousand American households that focuses on job satisfaction. Its 2013 data gave a comprehensive picture of the top factors that American workers rated as important to their work satisfaction[12]. The top ten characteristics that contributed to the greatest job satisfaction of those surveyed included growth potential, communication channel, interest in work, recognition, workload, performance review, work/life balance, supervisor, physical environment and quality of equipment[12]. In addition, a number of other important determinants were evaluated: age, income, region, economic elements, fringe benefits, work environment, other components. This mix of intrinsic and extrinsic factors, with a proportionally greater extrinsic focus is representative of other research in the field[13–15]. Table 1.1 summarizes the most common determinants found in this literature review.

Table 1: Determinants of job satisfaction

Determinant	General Occupation	Medicine in general	Family Medicine
Pay[11,12,19,21–24,26–28,31,32,38–42,44,48,49,57–60]	+	+	+
Colleagues/collegiality[11,12,15,21,22,26,28,36,38,39,42,57,61–63]	+	+	+
Work-life balance[12,19,23,28,31,35,36,38,53,61]	+	+	+
Physical environment[11,12,22,24,32,57,59]	+	+	+
Gender factors[13,15,31,33,39,46]	+/0		+/0
Responsibility[11,22,24,28,39,57]	+	+	+
Age[15,16,18,23,39,46,48]	+	+/-	+/-
Stress[18,36,62,63]	-	-	-
Social factors[24,27,35,64]	+	+	+
Personal health/wellness[15,18,39,40]	+	+	+
Rural/urban factors[15,20,39,53,63]	+	+	+
Autonomy[10,26,27,36,38,42,43,58,62]	+	+	
Supervisor[10,12,21,22,38,57]	+	+	
Promotion/advancement opportunities[11,21,22,26,57,59]	+	+	
Job security[12,22,27,28,31]	+	+	
Leadership roles[31,42,62]	+	+	
Sense of accomplishment[10,24,28]	+	+	
Work itself[11,22,53,57]	+		
Married[14,15,32]	+		
Flex plan/work benefits/retirement plan[12,19,57]	+		
Growth[11,27,62]	+		
Job importance[12,57]	+		
Interest in work[12,22]	+		
Lack of control[18,31,40,65]		-	
Schedule flexibility[26,46,59]		+	
Burnout[31,46]		-	
Rewarding work[31,61]		+	
Practice owner[41,49]		+	
Number of hours[18,20,23,32,34,39,46,49,53]		-	-
Recognition[11,24,26,38–40,44,57]		+	+
Academic involvement[26,31,44,49,61,63,66]		+	+
Direct patient care[28,36,38–41]		+	+
Job variety[20,28,39,42,67]		+	+
Quality of patient care provided[16,38,41,42,68]		+	+
Time spent on administrative work[23,36,38–40]		-	-
Freedom of working method[16,28,39]		+	+
Continuing medical education opportunities[23,40,53]		+	+

"+" denotes a positive correlation to job satisfaction, and "-" denotes a negative correlation to job satisfaction for that determinant. "0" denotes no significant correlation. Blanks indicate unstudied relationships.

Age is a determinant of job satisfaction[12]. In general, older workers are more satisfied than their younger counterparts[12,15–18]. However, the most recent Conference Board surveys in the US demonstrate that the 25 to 34 age group is presently the most satisfied in the American working population. The authors postulate that the recent economic downturn has had a significant effect on the satisfaction of older workers[12].

Income is also a strong determinant of job satisfaction[12]. However, it does not seem to have a consistent linear relationship with job satisfaction[13,15,19]. Satisfaction with income is a better predictor of job satisfaction than the absolute income[13,15]. However, there is no doubt that overall, those with higher incomes appeared to be generally more satisfied than their low income colleagues[12].

Geographic region also appeared to have an impact on a worker's job satisfaction[12]. In general, rural workers tended to have higher reported job satisfaction than their urban counterparts[15,20].

Workplace relationships factored high on the list of reported contributors to job satisfaction with most workers[21]. Both in early research[22] and more contemporary investigation[12], workers consistently rated the quality of their relationships with their work colleagues as an important component of their job satisfaction.

Work-life balance is another significant determinant of job satisfaction[12,19,23,24]. Married workers tended to place greater emphasis on the importance of work-life balance than non-married workers[14,24]. However, all workers rated work-life balance as an important factor to their professional job satisfaction[12].

The possibility of advancement in the workplace is another job-specific factor that is important to workers[21,25,26]. The emphasis on promotion opportunities was clear in early research in job satisfaction and was one of the important components of Herzberg's motivation-hygiene theory of job satisfaction where motivating factors in the workplace contributed positively to job satisfaction[27]. Accountants, human relations personnel and

emergency room physicians all cited career advancement opportunities as an important factor in their job satisfaction[19,24,26].

Other work-specific factors that are important to workers include job security, benefits, the nature of the work itself and recognition that the employment brings the worker (both within and beyond the workplace)[12,19,21,25,26,28,29].

The impact of a worker's disposition has also garnered a significant amount of research. Connolly and Chockalingam performed a meta-analysis of affective dispositions and found that the identification of a positive or negative affect could have a 10-25% impact on a worker's job satisfaction[7]. Psilopanagioti et al. similarly found that emotional intelligence was significantly and positively associated with job satisfaction among physicians in Greece[30]. This suggests that a significant portion of a worker's intrinsic satisfaction may be related to his/her affective disposition rather than an external factor.

Gender as a determinant of job satisfaction is a relatively recent area of investigation as most early research focused exclusively on male workers[5,31]. There are a number of recent studies that demonstrate a clear gender differentiation with female workers more satisfied than their male counterparts[31,32]. At the same time, there is a significant amount of data that demonstrates no gender difference in job satisfaction[12,13,16,29,33]. Closer examination of these studies revealed that though men and women may have similar job satisfaction overall, the factors that contributed to their satisfaction were often quite different[12,13,34,35]. Within different workplaces, the specific determinants of female job satisfaction are varied, but they range from a greater importance of personal life[35] to the importance of workplace flexibility[12] to Carleton and Clain's study that found that married women are the more satisfied workers[31].

There are a number of theories that have been postulated to explain the gender difference in specific determinants to job satisfaction. Some have suggested that women have traditionally had different reasons than men for working as they were often not the primary breadwinner in married households[31]. This allowed women to have different

expectations from their work than their male counterparts who may have felt that their primary role of financial supporter left them with less expectation of job satisfaction[31]. Others suggest that some traditional gender roles persist where women continue to have greater responsibility for child care and household work, which in turn affects their job satisfaction[14].

The determinants of job satisfaction in the general working population are diverse. Ranging from demographic and geographic characteristics to disposition, income and opportunities for advancement, workplace satisfaction is not limited to easily categorized, discrete variables.

1.3.2 Job Satisfaction in Medicine

Job satisfaction has been widely studied in the medical literature, and various tools have been developed to measure physician satisfaction[36–38]. As in other careers, there are occupation-specific determinants of job satisfaction that have been well-researched.

The first of these medicine-specific factors is the doctor-patient relationship. For many physicians, the presence of this interaction in their daily work is a significant source of satisfaction[36,39,40]. Although this could fall within the "nature of work" determinant above, the unique nature of the doctor-patient relationship and its significance to clinical practice makes it important to identify separately when investigating physician satisfaction[36].

The provision of quality patient care is also very important to physicians[16,32,40–42]. Providing what physicians perceive as low quality care has a consistent negative effect on their job satisfaction[16,42].

Control and autonomy are frequently cited satisfaction determinants for physicians[18,29,36,42,43]. Physicians who feel that they have greater control over their work environment and clinical decision-making are more satisfied than their peers who sense a lack of control[18,29,36,39,42].

Participation in academic pursuits including teaching and research has a positive impact on physician job satisfaction[26,29,44].

The amount of on-call[18] and the number of hours worked are also important[32] factors in a physician's satisfaction, with increased call and increased work hours contributing to worsened job satisfaction. Behmann and colleagues found that the majority of the German physicians in their study were unsatisfied with their work hours, which ranged from 40-60 hours per week[23]. What remains unclear is the threshold, or optimal number of work hours per week that positively affect physician job satisfaction.

The literature regarding physician satisfaction and gender is similar to that of the general working population. Some studies suggested that female physicians are more satisfied than their male counterparts[32], while others demonstrated no gender difference in physician work satisfaction[16,33,34], and others suggested that men were more satisfied than women[35]. However, there has been little investigation of gender differences with respect to determinants of physician job satisfaction.

There have been a few studies investigating female physician satisfaction alone. Carr et al. evaluated a group of dual-earner female physicians of different specialties for career and life satisfaction based upon hours of work, and found that full-time female physicians reported greater career satisfaction[34]. This study did not include a subgroup analysis of family physicians, nor did they evaluate the impact of practice type on career satisfaction[34].

Frank et al. similarly investigated US female physicians' career satisfaction with their evaluation of the Women Physicians' Health Study[18]. They found that in general, female physicians were satisfied in their career, and that work stress, harassment and poor control over their work environment negatively affected their job satisfaction[18].

There are a number of studies that have analyzed physician satisfaction in general[33,36–38,45,46]; however, none have evaluated the differences of individual determinants of job satisfaction between the sexes. With graduating numbers of Canadian female physicians consistently out-numbering their male counterparts since 2001[47], there is a need to characterize whether this demographic change in the workforce translates to gendered differences in professional satisfaction.

1.3.3 Job Satisfaction in Family Medicine

Physicians overall report being satisfied with their work[17,35,48,49], with one study finding that general practitioners were the most satisfied of all specialties[50]. Physician-specific determinants of job satisfaction include the quality of the doctor-patient relationship as well as the provision of quality care. Physicians appreciate autonomy and generally dislike having to work on-call. They seem to appreciate the addition of academic responsibilities; however the impact of these activities on their work-life balance, number of work hours and administrative load is unknown. What remains underreported is whether female and male physicians report different determinants of job satisfaction. Furthermore, the relationship of these determinants to the satisfaction of family physicians in particular has not been widely studied.

As in initial job satisfaction research, the impact of physician satisfaction on patient care has been investigated[42], and although there is not a clear relationship between physician satisfaction and patient care outcomes, there are other important features. More satisfied physicians have more satisfied patients[42,51], and there is a significant relationship between low physician satisfaction and higher attrition rates[42]. This has possible consequences for family physician recruitment, and certainly for retention.

There is an increasing trend for graduating family physicians to gain additional skills in certain clinical areas. From 1996 to 2011, the number of family medicine residents who chose to pursue additional third-year training (in emergency medicine or other enhanced family medicine skills) after completing their family medicine residency training

increased almost three-fold[52]. It is possible that trainees are choosing focused practices within family medicine because they feel that the enhanced skills will improve their work satisfaction. However, it is not entirely clear whether different practice types contribute positively to satisfaction. As noted earlier, there is some evidence that rural and urban workers (and their physician counterparts) express differences in their job satisfaction. Rural female physicians in particular report lower job satisfaction than their male or urban counterparts[53]. Additionally, academic physicians report greater job satisfaction than their non-academic colleagues[20,44,54]. It is unclear if these practice differences improve or worsen a family physician's job satisfaction. There has been little to no research looking at these practice factors and their effect on job satisfaction within the family physician community as a whole.

Job satisfaction of family physicians is important. More than four million Canadians lack access to a regular family physician[55], and recruitment and retention of physicians to family medicine is essential to improving access to primary care medicine in this country. Addressing the determinants investigated in this study may inform health system and policy changes that may keep the current family physician workforce satisfied and consequently aid in recruitment and retention[56].

Table 1 presents a summary of the most commonly studied determinants of job satisfaction of workers in general occupations, in all physician fields, and finally in family medicine. There are some determinants that illustrate a clear positive or negative effect on worker's job satisfaction (pay, collegiality, work-life balance). For other determinants, the relationship is not as clear (age and gender).

There remain questions regarding the impacts of the physician-patient relationship, academic responsibilities, work hours, age and family physician practice type (focused or generalist) on the determinants of job satisfaction of Canadian family physicians. Additionally, it is not clear whether there are gender differences in the determinants of job satisfaction of Canadian family physicians.

This thesis aims to address this research gap by investigating the determinants of job satisfaction of Canadian family physicians and evaluating whether there are gender differences amongst these determinants.

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An evaluation of the determinants of job satisfaction in Canadian family physicians

Chapter 2. Job satisfaction of Ontario family physicians - a qualitative study

Introduction

Job satisfaction has been widely studied in many fields, including medicine. In the general medical literature, a number of tools have been developed to measure physician satisfaction[1–3], and additionally, a number of physician-specific determinants of job satisfaction have been well-characterized. Those most commonly investigated include the impact of the doctor-patient relationship, the provision of quality care, professional autonomy, academic involvement, and the number of hours worked on physician professional satisfaction[1,4–12]. Overall, the majority of these studies report physicians as being satisfied with their work[13–16].

Unfortunately, research of family physician-specific job satisfaction is not as well-developed as that of physicians in general. There are far fewer studies examining the specific determinants of family physician job satisfaction – of three studies found in the literature search[12,17,18], only one addressed Canadian family physicians specifically[18]. The other studies included physicians certified in other disciplines who practice primary care (internal medicine and pediatric practitioners).

Canadian medical schools have seen a significant shift in the demographics of their graduates over the past fifteen years. Since 2001, over fifty percent of medical school graduates have been female[19], and consequently, the proportion of practising female family physicians is also increasing, comprising over forty percent of Canadian family physicians[20]. This changing face of practicing physicians has unclear consequences for the job satisfaction of family physicians. There is a small amount of literature examining overall physician satisfaction based on gender[8,10,13,21,22]. However, there is a lack of data

regarding the presence or absence of gender differences in the determinants of family physician job satisfaction.

Another recent change in the Canadian physician population is the increasing specialization of family physicians. Since 1996, the number of family medicine residents choosing to pursue additional third-year training (in emergency medicine or other enhanced family medicine skills) increased almost three-fold[23]. It is not entirely clear whether different practice types, or increased specialization contribute positively to satisfaction.

In an evolving practice environment, gaining a greater understanding of the factors that influence family physician satisfaction may aid in recruitment and retention of family physicians. At present, there are four million Canadians who lack access to a family physician[24], and it is possible that addressing some of the determinants of male and female family physician job satisfaction may improve patient access to primary care.

This study aims to address the current research gap by investigating the determinants of job satisfaction of family physicians in Ontario through the use of in-depth qualitative interviews. The analysis of the interviews will evaluate whether there are gender differences amongst these determinants.

Methods

Qualitative study

Setting

The study was conducted in Ontario, which has the most concentrated urban population in the country, but is also home to numerous rural and remote communities. There are over twelve thousand family physicians practising in Ontario[25]. Ethics approval for the study was obtained through the University of Western Ontario Health Sciences Research Ethics Board (Review Number 13595E).

Sample

A stratified purposeful sample based on age, gender, practice location (urban and rural) and involvement in academe included sixteen English-speaking practicing family physicians at the time of the study. The sample was designed to include an equal number of female and male participants, an equal representation of rural and urban physicians as well as an equal number of academic and non-academic physicians. Physicians from across the province of Ontario were invited to participate through an e-mail request that included a letter of consent. All sixteen subjects who were contacted consented to be interviewed.

Participants

Eight female and eight male family physicians participated. Of each gender group, there were two physicians from each of the following practice types: academic urban, academic rural, non-academic urban and non-academic rural. The age of the participants ranged from thirty- to seventy-five years old. A summary of the participant characteristics is found in Table 2.1.

Table 2.1: Summary demographics of study participants

		Age (in years)								
	Male	30-40	40-50	50-60	60-70	>70	**Urban**	**Academic**	**Have children**	**Married**
Number of participants	8	4	5	5	1	1	8	8	14	15

Data collection

The data was obtained through an individual, in-depth, semi-structured interview. Using this technique allowed the interviewer to ask questions and probe the participant in order to obtain a fuller understanding of his/her work experience and job satisfaction. The interview guide (Appendix B) was determined after a literature review of both physician and non-physician job satisfaction. The interview guide was followed by the interviewer,

and where appropriate, the interviewer explored the participant's responses in greater depth through further probing and questioning.

The sixteen interviews were conducted in-person at a location of the participant's choosing, or over the telephone between October 2007 and June 2011. Interviews were digitally recorded and transcribed verbatim.

Analysis

Two investigators independently reviewed the transcripts and coded the interviews through a constant comparison approach[26]. A coding template was developed and the themes that emerged during this analysis were compared between reviewers. There was agreement between the investigators during the coding process, and any discrepancies in coding would have been adjudicated by the third investigator. The final interpretation was performed using an immersion and crystallization approach[27] to elicit important themes. Thematic saturation with the sixteenth interview.

Results

The physicians involved in this study were generally satisfied with their work. The qualitative analysis revealed nine factors that contribute to a family physician's job satisfaction. These include flexibility, control, collegiality, variety of work, a satisfying personal life, maintenance of a balance between work and personal life, access to specialist care, low administrative load and personal work rewards.

These factors can be categorized into extrinsic and intrinsic factors. Extrinsic factors describe those that are external to the worker, and intrinsic factors typically involve the personal motivation of the worker. The extrinsic factors include flexibility, control of the work environment, collegiality, variety of work, access to specialist care, and low administrative load. The intrinsic factors include: a satisfying personal life, the balance between work and home life, and personal work rewards.

Overall Satisfaction

There was a general sense of satisfaction amongst all of the interviewed physicians with respect to their career and work. Some were unequivocal with respect to their current situation: "Right now I think I'm in the peak of my career and I'm enjoying what I'm doing and I think I'm doing as much as I want" (male 55, urban, non-academic). For others, the certainty of the choice to practice family medicine provides significant satisfaction:

> *I have no question that this is the absolute only thing I ever wanted to do. I can develop it and make it into things that you know, I may not want to do this now at my point in my career and I can change it, but I would never ever question not being a family physician. (female 48, urban, academic)*

Others looked at their overall satisfaction from a wider lens:

> *I think we create it, I think we create our own, like I think if people who are, maybe I shouldn't make a judgment call, but people who are dissatisfied, it's a choice, whether it's conscious or not. We choose our path. (female 39, urban, non-academic)*

As demonstrated above, some physicians were more philosophical in their reflections than others. Despite this difference in approach, a general sense of satisfaction permeated all of the interviews in this study.

Flexibility

The physicians in this study were unanimous in identifying flexibility as an important factor in their job satisfaction. Flexibility with respect to career choices as well as flexibility within clinical practice were cited as significant contributors to individual physician's satisfaction. Flexibility included ability to control your workload, and type as well as work hours and location.

> *I like the variety of care and I liked the options available. I also like the fact that I can change my practice as I grow into it, and grow older. (female 39, urban, non-academic)*

One physician referred to the positive change in satisfaction he found in making a major career change that was facilitated by the flexibility of family medicine.

> *I think in a person's career it rejuvenates you to actually make a dramatic switch, you know, like if you were urban going rural or if you're academic go private, or if you're private go - I think moving to an urban setting and moving to a different payment model, those were both rejuvenating for me I think and having more teaching. (male 56, urban, academic)*

Many other physicians spoke of smaller changes that they were able to make to improve their satisfaction that were directly related to their job flexibility:

> *About 15 years ago I gave up my emergency medicine practice which I quite enjoyed, because I had to give something up as work came up it was hard to decide, but I took a full time appointment in the academic department… and let [emergency] medicine go, I used to do that a day a week and a weekend a month and quite enjoyed it. It wasn't going to fit anymore and I haven't missed it since I made the decision, but it was difficult… (male 53, academic, urban).*

The flexibility that the physicians enjoy in their family medicine career overlaps with some of the other factors involved in their satisfaction, including personal control in their careers and maintaining an ideal work life balance.

Control

In this study, participant physicians identified control at work as an important contributor to job satisfaction. The physicians interviewed had varied opinions regarding the amount of control they currently possess.

Some, such as this 47-year-old male rural, non-academic physician, felt satisfied with their current level of control, but foresee that it could impact their future satisfaction, particularly as a rural physician. When asked about the importance of personal control in his workplace to his job satisfaction, he responded:

> *… because I am satisfied with what I am doing, there's no, there's no desire for me to change my career… I do see my friends and*

> *colleagues having some difficulty with the transitioning from, it, they're wanting to cut back or it's altering their career in a rural community and you have, you're much more limited to what you can do. So, that could be a potential problem for me in the near future.*

Others are quite satisfied with the control they wield in their professional lives:

> *I think that control is really important especially for me… I personally I think I have tons of control… so I have tons of control, in that I could say I'm going to change this at any time and that's the thing that gives me complete ability to tolerate or deal with the stresses that I've got right now, because I can do anything I want. (female 48, urban, academic)*

This feeling of having sufficient control appeared to be an important determinant to our respondent's work satisfaction.

Collegiality

Collegiality was considered one of the most important contributors to job satisfaction for our participants. Many noted that the quality of their relationship with their physician, nursing and administrative colleagues is a significant determinant of their job satisfaction – one that they hadn't considered prior to practising.

> *I'm not sure that I really would have thought it was a big factor until you sort of work in a couple of different areas where you see groups who get along really, really well and it's fun to go to work and then you do a rotation in the clinic and you think wow I could never work here because everyone's sort of batting heads the whole time and that kind of stuff. So I think it's a huge determinant, I mean if I couldn't get along as well with the people that I worked with, I don't think I'd be satisfied. And it would start rolling over into your home life and all that kind of stuff because you're not happy. (female 30, academic, rural)*

Another noted that the importance of these workplace relationships is significant because of the time that family physicians spend with their colleagues.

> *I think that that's almost as important as who you're married to… I'm really not saying that facetiously. You spend probably, at a*

> *partnership; you probably spend as much time with your partners as with your family. (male 75, urban, non-academic)*

A few other participants noted that difficult relationships can be detrimental to a work environment (sometimes in an insidious manner) – this concern was perhaps best described by this family physician.

> *But certainly I've worked with people that are pretty disruptive or toxic. And it's curious because when you work with them you don't necessarily know how bad they're affecting the people around them until they leave town, then you suddenly realize that everybody's kind of... settled down. (male 53, rural, academic)*

While most participants expressed the importance of collegiality, many described experiences when they were dissatisfied and realized only afterwards that it was the interpersonal relationship causing the distress.

Variety of work

The participants in this study voiced that they were drawn to the variety inherent in the field when they chose their profession, and continue to find the variety an important component to their job satisfaction. There was no difference in the perception of variety in their work between interviewed urban and rural physicians. Many rural physicians noted that what drew them to rural practice was the variety found in the work:

> *I've never worked in urban, but my perception is that you know compared to urban I get to do a lot more hands on activities and I really enjoy that so I work in emerge, I can cast, I can take foreign bodies out of eyes, I can do lumps and bumps and do all those sort of things. You know, look at x-rays right away and things like that and I like those skills and I would be worried that I wouldn't be able to do that in an urban setting. I also wouldn't want to go the other way; I don't want to be, you know, six hours from a main hospital so that you know what do I do with an unstable patient? So I like that sort of compromise, so I think it is important. (female 33, academic, rural)*

Urban physicians likewise felt that the variety found in their practice was essential to their satisfaction:

> *Right now I think it's the opportunity of being able to do a wide variety of things and not the same thing over and over again (male 55, urban, non-academic).*

The concept that a variety of positions within their medical practice in addition to the variety inherent in traditional family medicine both contributed positively to their satisfaction was found with the majority of participants.

Access to specialist services

Amongst administrative stressors, poor access to a specialist was considered an important contributor to work satisfaction for the participants. Both rural and urban physicians described lack of access being a factor, with poor access being more prevalent amongst the rural physicians.

> *The specialty back up for rural physicians is poor in the way its set up as far as funding goes and the culture goes. And that could definitely be improved. That would increase my satisfaction, hugely. (male 47, rural, non-academic)*

Interestingly, the physician's relationship with specialists seems to have a significant impact on the perception of specialist access. One physician who moved from another province to Ontario – and from a rural to an urban centre describes his challenge with specialist access.

> *In [rural location] I knew almost every doctor in [the province] by name… so I could pick up the phone at any time and call any specialist in the province and most of the time I could get a patient in the next morning. So I was a big fish in a little pond and then I moved to [Ontario urban teaching centre] and I don't know anybody, so they don't know me, and so it takes time to build a rapport with the specialist and even if you have a rapport they still can't always do you a favour, so access to specialist I think is more difficult in this situation than it was in my other site. (male 56, urban, academic)*

Another physician who works in a rural setting with specialist access notes the difference between having a positive relationship with his local specialists and the challenges of working with the urban centre.

> *It's stressful. And if it can happen once in a while you can deal, but if that became a recurring theme. It becomes a problem. And I say one of the nice things about [our rural community] is the specialist backup, because it makes it less of a problem. Like when we were in [remote/rural area] that was a big problem because we didn't have any specialists. So we were dependent on [larger centre] … You'd phone… and I mean they would just literally, I mean they'd be incredibly rude. (male 53, rural, academic)*

The experience of these family physicians suggests that access to specialist care is not only characterized by physical/geographic access, but also comprises a positive working relationship with specialists. This relationship in turn proved to be important to the participant's self-reported work satisfaction.

Administrative load

Most of the participants felt that the burdens of paperwork and administration contribute negatively to their job satisfaction. In fact, a few participants mentioned that routine encounter documentation is a dissatisfying aspect of their daily work.

> *I think the amount of charting that one really has to do in order to sort of maintain medical legal files, I mean they do nothing to add to clinical care, but you know you need to do them in order to maintain what the college considers adequate records and what we're taught need to be adequate records or simply medical equal purpose… that I don't like. (male 42, rural, academic)*

There appears to be a dissatisfaction amongst the family physicians in this study with "paperwork", and the amount of time it takes from both clinical practice and from their personal life.

> *One aspect of satisfaction that I'm totally dissatisfied with is the amount of paperwork that I was always told about, but never fully understood. (female 39, urban, non-academic)*

The burden expressed by most physicians was that imposed by other organizations (medico-legal requirements) as well as their patients (forms and letters).

Satisfying personal life

The family physicians in this study are similar to other workers in that they value their personal life and feel that having a satisfying home life contributes positively to their job satisfaction (and vice versa). Many commented on changes they made to improve their personal lives and hence their job satisfaction:

> *Yes. In my practice in [other location] because of the amount of work I did, I ended up getting divorced, and living alone in a smaller center which was horrible and I needed the anonymity to move to a major city and that's what happened, so I think those kind of personal life issues did make me, make a change in my practice.*
> *And that change helped?*
> *Absolutely. It rejuvenated me personally and professionally. I think it was good thing. (male 56, urban, academic)*

Others, like this respondent, felt that there are some gaps in her satisfaction with her personal life that impacts her current job satisfaction:

> *I think as I get older, I don't know if I'm like a lot of other physicians, I think I would like to learn other things outside of medicine, you know? And just enjoy or contribute to other things in the community, and I'm not able to do that. I'm just starting to do things, even like reading right now. (female 54, urban, non-academic)*

Many physicians commented on the changes that they were making in their professional lives to improve their personal satisfaction (and thus their professional satisfaction). These ranged from Fridays off (female 30, rural, academic) to adjusting an office schedule for yoga (female 33, rural, academic) to taking piano lessons:

> *I took up the piano about five years ago, and go once a week for piano lessons with my daughter and I've fit that into the end of an afternoon that I leave flexible and take off. And that works well, that's a good stress reliever and it gives me guaranteed time that's protected each week. (male 53, urban, academic)*

For all of these physicians, their personal satisfaction has a significant impact on their job satisfaction.

Finding balance between work and personal lives

"You have to be cognizant of it. You have to be cognizant that a balance has to be maintained."(male 53, rural, academic)

The dynamic balance of a physician's professional and personal life can be challenging. The family physicians in this study were unanimous in characterizing the work-life balance important to their job satisfaction. Many commented on the challenges of maintaining, or finding a balance that is agreeable: "I think just the balance in trying to be a mother and keep this job is really tough" (female 47, urban, academic). Interestingly, there was no gender divide amongst the participants with respect to their weighting of the importance of a positive work-life balance. The male and female physicians equally felt that the demands of the work environment often had a negative impact on the maintenance of this delicate work-life balance:

> *I mean in my first four years working in a 100 hour work week it was basically, I would show up and my little daughter would take a look at me and run away crying because she didn't know who I was. (male 55, urban, non-academic)*

Another physician noted that he identified the importance of protecting his personal life from his work life after observing the impact that an undesirable balance had on a colleague.

> *… there was an old guy there and he used to be 1 in 3. And that's different I think because you couldn't do anything in those, you know there wasn't a lot that you can do. But I remember saying to him so how did you cope? And he said well I just thought it was normal to be tired. I don't want to spend 40 years thinking it's normal to be tired. (male 53, rural, academic)*

In managing the dynamic between work and home, many physicians noted the importance of making a clear separation between the two: "and so it's more or less clicking a switch and saying, 'when I'm at home I'm at home' ". Some physicians expressed frustration at not being able to 'click that switch':

> *I think my wife would like to see me home more, you know? I mean playing the various roles even the teaching and that sort of thing I mean it all takes time. So there's a lot of after hours work. I often come at night time after the kids are tucked in bed to finish a couple of hours of work. I have blocked time off in the past, and things sort of get filled in that block time… (male 42, rural, academic)*

Others seem to have orchestrated a more ideal balance from the beginning. One physician noted that she was aware of the importance of adjusting her schedule early in her career on the advice of a colleague, and that this has contributed to her current satisfaction with her work-life balance:

> *Right from when I started I've never worked Friday afternoons… I've been pretty good at keeping it separate and just making sure that you take that time for yourself. And I think if you don't do that right from the beginning then it gets harder, it's harder to take time off later than it is to schedule in some of those afternoons, whereas if you always have them off in the beginning then you go, really I'm working this Friday? I don't work Friday afternoons. And someone had just told me that years ago and said from the day that you started you take an afternoon that's just yours and that's probably the best advice anyone ever gave so that's my advice to everybody. (female 30, rural, academic)*

Most of the family physicians in the study were generally happy with their current work-life balance, but all spoke to the importance of regular reassessment. For some, this meant making changes at work (or at home) to tilt the scales towards a more positive side. Others depend upon their partners to identify when the balance is not ideal:

> *I'm satisfied with it. I have to pull back and arrange every once in a while and say, "ok, I can't work as much, or I got to slow down or a bit more and take more time," but it's the type of job that I find you just get going and you get more and more involved and you end up getting more and more things. Actually my wife just sort of says, "hey, act off of it". (male 55, urban, non-academic)*

All of the participants felt that the ideal work-life balance was essential to both their work and home satisfaction; however, they had varied satisfaction with maintaining that equilibrium. The most satisfied physicians appeared to be those who were able to make a clear division between work life and home life. As one participant stated, "I am

physician when I am physician, when I am mother, I am mother" (female 62, rural, non-academic).

Continued challenge/work rewards

One of the greatest satisfactions of family medicine in this study is its inherent intellectual challenge and reward: "… I think I like the intellectual kind of challenge of it. Because I think… family medicine is really intellectually challenging" (male 53, rural, academic).

Many of the academic physicians noted that their interaction with learners and medical education adds to this satisfaction.

> *I mean I just love to practice medicine, I mean I love obstetrics and that's probably the thing that keeps me going. I just had a great session with the 3rd year medical students on perinatal loss and you know when you sort of see the learning that's happening, but also their intellectual thinking, that really helps the job satisfaction. (female 48, urban, academic)*

Some commented that their satisfaction would be improved if their knowledge or intellectual capacity were greater. In particular, this physician feels that increasing his knowledge would improve his satisfaction.

> *When you choose rural medicine you have to be comfortable with not knowing important stuff that you should know. It's part of the package. So anything I can do to improve that would make that, that void smaller; would make me happier. I reckon that it's an impossible task. (male 47, rural, non-academic)*

Whereas others look at the challenge of limited knowledge as a contributor to their satisfaction: "There's always challenges and things happening and opportunities to be challenged to stay current, to work on new stuff, so I like that" (male 53, urban, academic).

Gender

There were no significant differences in the resulting determinants of job satisfaction between the male and female family physicians. In fact, their agreement on the specifics of their satisfaction was striking. Despite this, there were two small areas that appeared to have gender variance. Two of the eight women felt that the introduction of electronic medical records in their practice worsened their satisfaction and increased their workplace stress. Both women cited the increased time related to EMR implementation and use as significant to their dissatisfaction.

> *Everybody knows I am not a big computer fan… but you know, I really think it is very time consuming, and the system that we have [BRAND], it's not working well. And I am really frustrated losing so much time, dealing through lab reports. And electronic filing because, you know, it's, it takes more time than our old way of doing it. (female 62, rural, non-academic)*

In addition, two of the eight men interviewed felt that the nature, or "obligation" (male 42, rural, academic) of the patient-physician relationship contributes to a loss of physician control. One physician noted "your patients dictate your work life" (male 47, rural, academic).

Practice Type

There were four different practice types identified in this study. Participants worked in academic or non-academic practices, and an equal number of rural and urban physicians were interviewed. There was no difference in participant's identification of job satisfaction determinants across geographic or academic/non-academic practices.

Discussion

Overall Satisfaction

The physicians in this study were generally quite satisfied with their current careers. Most of the participants described themselves as being satisfied while at the same time having a desire to improve their satisfaction. This is consistent with most other physician

research has demonstrated that physicians are mostly satisfied with their work[13–16]. In fact, a cohort study of Norwegian physicians found that general practitioners were the most satisfied of all specialties[28].

Flexibility

The importance of flexibility as a determinant of satisfaction was undeniable amongst the interviewed physicians. This echoes previous research in the field. Career flexibility has been previously noted to be important to female emergency room physicians[6], female surgeons[13] and physician assistants in the United States[29]. Not surprisingly, flexibility has allowed some physicians make major career changes in order to improve their job satisfaction. This was clearly demonstrated by some of our participants, and interestingly, other studies have found that career satisfaction improves amongst physicians when a change in position is made[28].

Control

Frank et al. noted the importance of work control to job satisfaction in American female physicians where those who had the greatest "work control" also described themselves as "always" or "almost always" being satisfied with their work[4]. This is similarly noted in other professions[30] where having autonomy within one's career is tied to job satisfaction. In Canada, most family physicians are self-employed, or work within a structure where they have some control over their work environment, hours and practice characteristics[31]. It is possible that the nature of the typical family medicine practice attracts those physicians who seek more control in their work environment.

Collegiality

The impact of collegiality on a physician's job satisfaction is widely reported amongst family physicians[16,32] and other specialties[13,15,33]. Collegiality is generally considered an important contributor to satisfaction, but many participants in this study described experiences when they were dissatisfied and realized only afterwards that it was the interpersonal relationship causing the distress. It is possible that the utilization of the one-on-one interview allowed these more introspective responses. Further research in

this area could focus on whether increased education to physicians about the importance of collegiality might lead to an improvement in job satisfaction. It is possible that physicians who don't identify a specific cause for their dissatisfaction remain dissatisfied for longer? Or are they unable to make the necessary changes to improve their satisfaction? Self-reflection in evaluating one's own job satisfaction appears to be important, especially to this study group, and certainly previous research looking at physician emotional intelligence confirms that it is significantly and positively correlated to job satisfaction[34].

Variety of work

The majority of physicians in this study felt that the variety found in their work contributes positively to their satisfaction. A previous exploratory study of general practitioners in Europe[16] found that workplace variety was second only to collegiality in importance for their job satisfaction. Family medicine is a field that has an inherent amount of variety, and it is not surprising that its practitioners find the variety important to their satisfaction.

Access to specialist services

The physicians in this study were quite clear that access to specialist care is important to them, and yet is lacking at times. What is interesting is that it isn't only rural physicians who expressed dissatisfaction with specialist access, but academic physicians in urban centres who find that not being familiar with specialist staff creates barriers to specialist care.

Previous research has found that Canadian rural physicians are more dissatisfied with specialist access as compared to their urban counterparts[35].

Administrative load

None of the interviewed physicians were satisfied with their administrative duties. The frustration with paperwork does appear to be separate from academic responsibilities as none of the physicians commented on their academic load contributing negatively to their

job satisfaction. This suggests that the uncontrolled nature of the administrative paperwork contributes to job dissatisfaction amongst these physicians. A German study found that administrative tasks were the most dissatisfying for both general practitioners and internists who practice primary care[17]. This has implications for improving future physician satisfaction. The shift of unnecessary paperwork from physicians to other members of the care team has the potential to improve both physician satisfaction and physician efficiency. The automation of some of these tasks through improved EMR technology might reduce the burden on other health care practitioners.

Satisfying personal life

Most of the literature surrounding the understanding and characterization of job satisfaction does place a particular emphasis on the emotional and affective aspects of the worker[34]. It would make sense that a physician's personal life would contribute to her emotional and affective make-up in all spheres of her life. Most of the respondents in this study were very clear that their personal lives had a significant impact on their job satisfaction. Indeed, some had made significant changes to their work in order to improve their personal satisfaction (rather than to improve their work satisfaction).

There has not been an emphasis on personal satisfaction within the physician work satisfaction research. Non-physician investigations have been equivocal – Rice et al. failed to find a correlation between life satisfaction and job satisfaction in American workers[36]. Conversely, Rogers and May published a large study in 2003 that found that marriage quality has a significant impact on job satisfaction[37].

Finding balance between work and personal lives

Identifying and maintaining the optimal work-life balance was perhaps one of the most important factors noted in our interviews. The female physicians in this study worked the same number of hours as their male counterparts, and both genders expressed similar frustration at maintaining an optimal work-life balance.

There has been a lot of concern regarding the impact of increasing numbers of female physicians in the field[38,39]. This relates mostly to the fact that in general, female physicians tend to work shorter hours and occupy fewer academic and administrative positions than their male colleagues[38,40]. Many investigators suggest that addressing work-life balance for female practitioners might improve the gender imbalance found in some areas in medicine[13]. This study suggests that men share the same work-life balance concerns as their female counterparts and that focusing on strategies to help women physicians may not be sufficient to address the entirety of the family physician workforce.

Continued challenge/work rewards

Bovier and Perneger[1] found that increased access to continuing medical education increased overall physician satisfaction amongst a varied population of family physicians and specialists. There have been a few studies that demonstrate that physician satisfaction is linked to recognition of their work[7,16]. None of our participants noted that outside recognition of their skills or work as being important to their job satisfaction. Instead, the inherent intellectual challenge of their profession appeared to be the most significant component of this intrinsic characteristic.

Gender

A recent study performed by the American Medical Association suggests that there is a significant decrease in physician work satisfaction with the implementation of an electronic medical record[5]. It is interesting that only female physicians in this study voiced EMR as significant to their job dissatisfaction. Other investigations have not demonstrated a gender difference with respect to attitudes towards EMR implementation[41].

Interestingly, only male physicians in this study cited obligation to patients as a source of dissatisfaction. There is very little in the current physician satisfaction research that investigates or extrapolates this sentiment. This may be a result of patient obligation

being wrapped into a more general work-related burden category when evaluating physician satisfaction[1].

Practice type

As noted in the results, there was no difference found amongst physicians practicing in different geographic or academic environments. Family physicians in Canada can have quite varied practices that include a more traditionally comprehensive family practice ("cradle to grave" care) to completely specialized care (sports medicine). In fact, more than sixty-percent of family physicians in Canada currently identify their practice as being specialized[42]. Within the limits of this study, it was not possible to also interview a cross-section of specialized physicians, but this is an area for future research.

Conclusion

This study confirmed that family physicians in Ontario are satisfied and identified nine significant determinants that contribute to the job satisfaction of family physicians. These included flexibility, control, collegiality, variety, access to specialist services, low administrative load, satisfying personal life, work-life balance and continued challenges in the profession. Most of these determinants are consistent with previous literature in the general job satisfaction and physician satisfaction fields.

There were no gender differences identified in the nine primary determinants of family physician satisfaction. There were small differences identified in female physicians' reactions to electronic medical records, and in male physicians' feeling of obligation towards their patients.

In addition, no differences were noted in the different practice types studied – academic and community-based and rural and urban practices.

This study confirms previous research in both physician and general job satisfaction both with respect to the overall satisfaction of family physicians with their work and with

respect to the importance of the identified determinants. It also provides further clarification that in this population, there are not significant gender differences in job satisfaction determinants.

This study was performed within a small population of family physicians across Ontario. Limitations with this design include the possibility that the results are not representative of family physicians across Canada. Additionally, the interviews were conducted over a span of four years (from 2007 to 2011). It is possible that there were situational differences in the practice climate in the province over these four years that may have influenced participant responses.

The small size of this study also limited the identification of differences amongst family physicians in different practice types. A larger study focused on family physician specialization and satisfaction within various specialty practices would further clarify if there are any differences in physician satisfaction across these practitioners. At a time when family physicians are becoming more specialized in Canada[23], differences within specialized primary care providers could have significance within the physician workforce.

The observation that male physicians identified obligation to their patients as a barrier to their job satisfaction would be interesting to pursue further. Do only male family physicians feel that their patient obligations negatively impact their work satisfaction, or does this feeling permeate the wider physician community? This observation does not appear to affect the overall job satisfaction of male family physicians as opposed to their female counterparts, but does bring up a factor that male physicians in this sample specifically felt was important.

Similarly, the finding that some female physicians perceive electronic medical records as a negative determinant to their job satisfaction deserves further investigation. Again, is this a gendered phenomenon, or are there features of physicians or their practices that

make it more likely that they are wary of EMR implementation? This could present a significant barrier to EMR adoption across the country.

The job satisfaction of family physicians is important as we continue to recruit practitioners to this field. More than four million Canadians lack access to a regular family physician[24], and recruitment and retention of physicians to family medicine is essential to improving access to primary care medicine in this country.

These results could be helpful to medical students sifting through residency applications, to family medicine residents contemplating career options, and to both local and provincial governments recruiting new family physicians. An awareness of the factors that affect family physician satisfaction may help medical students decide whether the field is an ideal fit for their personalities and practice goals. It is likely that family medicine residents contemplating various practice options – including geographic region, sub-specialization, and specific practice types will find that considering the above-mentioned determinants may lead to improved career choices.

Additionally, underserviced communities who are eager to recruit and retain family physicians would benefit from addressing some of these factors. Certainly, a focus on improving workplace flexibility, the amount of physician control, and addressing work-life balance would be well within the scope of communities or community health centres who are recruiting physicians. More systemic changes addressing specialist access and administrative responsibilities might be better addressed by regional administrative policies or provincial initiatives. Provincial medical associations could play a role in advocating for change at this level in order to improve physician retention[43].

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An evaluation of the determinants of job satisfaction in Canadian family physicians

Chapter 3. Job satisfaction of Canadian family physicians - a multivariate analysis

3.1 Introduction

The evolution of job satisfaction inquiry has moved from rigid theories and models[1] to a broader understanding that a myriad of factors might influence a worker's satisfaction[2]. In the research surrounding physician job satisfaction, physicians as a group appear to be satisfied with their work[3–6]. A number of determinants have been identified that influence this satisfaction, including the doctor-patient relationship, the provision of quality care, professional autonomy, academic involvement, and the number of hours worked [7–16].

However, there are some gaps in our current understanding of factors that impact job satisfaction of Canadian family physicians. First, there are only a few studies that specifically address the job satisfaction of family doctors[16–19]. With respect to Canadian research on this topic, there are even fewer studies that look at the nation as a whole and evaluate the determinants of job satisfaction for family physicians across our country[19]. Lepnurm et al. in 2007 provided the most comprehensive analysis of family physician satisfaction in Canada with an emphasis on the variation between rural and urban practitioners[19]. Their survey-based study examined the differences in job satisfaction amongst family physicians in urban settings, regional communities and small towns, finding that distress, financial equity, professional equity, work organization and collegiality were important factors in family physician satisfaction[19].

Our current Canadian family physician workforce is changing, with more women than men graduating from medical school[20], more family medicine graduates choosing additional third-year training[21], and increasing adoption of electronic medical records[22,23]. There has also been a push in some jurisdictions to shift physician remuneration from the traditional fee-for-service model to comprehensive relative-value-based incentive plans (CRVPs)[18].

The impact of these changes on our current understanding of physician job satisfaction is unclear. In an evolving practice environment, gaining a greater understanding of the factors that influence family physician satisfaction may aid in recruitment and retention of family physicians. At present, there are four million Canadians who lack access to a family physician[24], and it is possible that addressing some of the determinants of male and female family physician job satisfaction may improve patient access to primary care. Physician dissatisfaction is a key factor in physician burnout and subsequent exit from clinical practice [19,25–35]. Addressing factors that affect job satisfaction early in a physician's career (including in training programs) may reduce rates of burnout and subsequently improve primary care delivery in Canada.

Work-life balance has been well-researched[25,27,28,31,35–38] as a determinant of job satisfaction in physicians, but it has also been recognized on its own as an important contributor to burnout, and an important factor in physician recruitment and retention[35,39,40]. Some studies suggest that female physicians are more likely to cite their work-life balance as a significant factor in their career choices[10,37,38], while others do not demonstrate a gender difference[25,27,41–43].

The qualitative study discussed in detail in Chapter Two was an exploration of job satisfaction in Ontario family physicians. It confirmed nine factors that family physicians value as important to their job satisfaction, including: flexibility, control, collegiality, variety, access to specialist services, administrative load, satisfying personal life, work-life balance and continued challenges in the profession. Additionally, female physicians found that their use of electronic medical records decreased their professional satisfaction.

This study aims to address the current research gap in the field of family physician job satisfaction by investigating the determinants of professional satisfaction and the determinants of satisfaction with work-life balance of family physicians. This

quantitative analysis will supplement the results obtained from our qualitative study and provide a more thorough understanding of family physician satisfaction in Canada.

3.2 Methods

This study was a secondary analysis of the 2013 National Physician Survey.

The National Physician Survey (NPS) is a collaborative partnership between the Canadian Medical Association (CMA), the College of Family Physicians of Canada (CFPC) and the Royal College of Physicians and Surgeons of Canada (RCPSC) with the goal of compiling a comprehensive database of the physician workforce in Canada[44]. It is an annual survey, and the 2013 iteration had a focus on employment opportunities and challenges of physicians in Canada[44].

Sample and Participants

The 2013 survey was an online survey distributed to all licensed physicians in Canada by electronic mail. Medical students, residents and retired physicians were not eligible to participate. The 2013 survey had a base population of 77 279 physicians registered in the Canadian Medical Association membership database[44]. Of these, only 60 225 had a functioning e-mail address that could receive the e-mail invitation[44]. These participants received the invitation e-mail in April 2013 and three subsequent reminder e-mails every two weeks thereafter[44].

The family physician response rate was 17.0%, or 4626 survey responses out of a potential 27 195 family physicians who received a survey. The estimated family physician population at the time of survey delivery was 34 753. The survey responses were weighted to adjust for non-responses for province of residence, type of physician (family physician vs. specialist), age and gender [44]. The family physician population used for the weighting was 34 753. The details of the weighting method as reported by the National Physician Survey are included in Appendix D.

Variables

In this study, the NPS was evaluated for questions applicable to family physician satisfaction. A review of the literature, and the results of our qualitative research informed the variable selection. The independent factors most commonly associated with physician job satisfaction in the established literature that could be obtained in the NPS data include income, work-life balance, age, urban/rural factors, number of hours worked per week, and academic involvement[7,15,16,19,32,45–52]. Variables whose impact on family physician satisfaction was equivocal were also included in our analyses. These include gender, age, whether the physicians considers him/herself a "specialist" in family medicine, on-call provision, remuneration type, the number of years in practice and the province of practice[7,15,16,19,32,45–52]. The use of electronic medical records was added as a variable after our qualitative study revealed that this may have an impact on job satisfaction. There is a growing body of research surrounding electronic medical record use and its impact on physician satisfaction with most research demonstrating that the more positive the satisfaction with the electronic health record, the greater is the physician satisfaction [9,53–55]. A total of twelve independent variables were used.

Table 3.1 outlines the independent and dependent variables, the specific NPS questions related to the variables and the response categories that were used to evaluate the results.

Table 3.1: Independent and Dependent Variables

Variable	Independent/ Dependent Variable	NPS question	NPS response categories	Final category
Gender	I	23. You are:	a) male b) female	male female
Age	I	22. Your year of birth:	19__	<35 years old 35-44 years old 45-54 years old 55-64 years old >65 years old
Province	I	9i. Please provide the 6-digit postal code of your main patient care or main work setting:	Postal code	Atlantic provinces Quebec Ontario Manitoba and Saskatchewan Alberta British Colombia
Number of years licensed	I	20. In what year did you become licensed to practice medicine in Canada for the first time?	Year	< 4 years ago 5-9 years ago 10-14 years ago 15-19 years ago > 20 years ago
Type of practice	I	2i. Is your practice focused in any of the following areas?	none addiction medicine chronic non-cancer pain developmental disabilities child and adolescent health emergency medicine family practice anesthesia global health health care of the elderly hospital medicine maternity and newborn care mental health occupational medicine palliative care prison health respiratory medicine sport and exercise medicine other	Family physician only Focused family physician

Table 3.1: Independent and Dependent Variables

Variable	Independent/ Dependent Variable	NPS question	NPS response categories	Final category
Academic Involvement	I	6b. Are you remunerated for teaching beyond payment for clinical services?	Yes No Do not teach	Teaches Does not teach
Primary Practice Population	I	9. With respect to your main patient care/practice setting, describe the population primarily served by you in your practice	Inner city Urban/suburban Small town Rural Geographically isolated/remote Cannot identify a primary geographic population	Inner city Urban/suburban Small town Rural/remote
Method of payment	I	6a. In the last year, approximately what proportion of your professional income did you receive from these payment methods? (total must equal 100%)	Fee-for-service insured Fee-for-service uninsured (private pay services) Salary Capitation Sessional/per diem/hourly Service contract Incentives and premiums Other	>90% fee-for-service > 90% other >90% blended model
Provision of On-call service	I	14. Do you provide on-call services?	Yes No Not applicable (does not do patient care)	Yes No
Uses electronic records	I	12. Do you use electronic records to enter and retrieve clinical patient notes in the care of your patients?	Yes No Not applicable (does not do patient care)	Yes No

Table 3.1: Independent and Dependent Variables

Variable	Independent/ Dependent Variable	NPS question	NPS response categories	Final category
Total hours worked per week	I	15. Excluding on-call activities, how many hours in an average week do you usually spend on the following activities?	Direct patient care without teaching Direct patient care with a teaching component Teaching/education without direct patient care Indirect patient care Health facility committees Administration Research Managing your practice CME/professional development Other	< 20 hours 20- <40 hours 40- <60 hours 60-<80 hours 80-<100 hours 100-<120 hours > 120 hours
Satisfaction with remuneration model	I	18. Rate your satisfaction with your remuneration model	Very satisfied Satisfied Neutral Dissatisfied Very dissatisfied	Satisfied Dissatisfied
Satisfaction with professional life	D	18. Rate your satisfaction with your professional life	Very satisfied Satisfied Neutral Dissatisfied Very dissatisfied	Satisfied Dissatisfied
Satisfaction with work-life balance	D	18. Rate your satisfaction with the balance between your personal and professional commitments	Very satisfied Satisfied Neutral Dissatisfied Very dissatisfied	Satisfied Dissatisfied

Two dependent variables were used in the analysis: satisfaction with professional life and satisfaction with the balance between personal and professional commitments. Satisfaction was measured on a five-point scale in the NPS survey, with the possible responses being: very dissatisfied, dissatisfied, neutral, satisfied and very satisfied. In order to perform the binary regression analysis, the responses were categorized into "satisfied" and "dissatisfied". The "satisfied" category included responses of satisfied

and very satisfied, while the "dissatisfied" category included very dissatisfied, dissatisfied and neutral. Neutral was included in the "dissatisfied" category as the goal was to elicit true satisfaction, and it was felt that neutral did not express a truly satisfied response.

The twelve independent variables included age, gender, province, number of years of licensure, family practice type, academic involvement, primary geographic practice population, remuneration method, provision of on-call service, use of electronic medical records, total hours worked per week and satisfaction with remuneration model.

Age was changed from a continuous variable to a categorical variable with five categories (<35 years old, 35-44 years old, 45-54 years old, 55-64 years old, and over 65 years old). Provinces were collapsed from ten provinces and three territories into five categories of: Atlantic provinces, Quebec, Ontario, Manitoba and Saskatchewan, Alberta and British Colombia. The provinces were grouped to account for the small responses from less populous provinces. Territories were not included in the analysis due to the small number of responding physicians practicing in Nunavut, Yukon and Northwest Territories.

The number of years of licensure was categorized into five groups: < 4 years of licensure, 4-10 years of licensure, 10-15 years of licensure, 15-20 years of licensure and greater than 20 years of licensure.

The family practice type was categorized into "family practice only" and "focused family practice". The latter category included physicians who answered "yes" to question 2i which asked "Is your practiced focused in any of the following areas?". A physician responding to any of the choices listed was categorized as having a "focused family practice". Respondents not providing clinical care were excluded, and were recoded as "missing".

Provision of on-call service was categorized into “yes” and “no” with exclusion of those not providing clinical care (they were recoded as “missing”). Similarly, using electronic medical records was divided into “yes” and “no” with the exclusion of those who do not provide clinical care.

Academic involvement was examined through NPS question 6b that inquired about remuneration for teaching. Responses were categorized into “teaches” (which included responses of both “yes” and “no” to receiving remuneration for teaching) or “does not teach”.

Primary practice population was categorized from six categories into four: inner city, urban/suburban, small town and rural/remote. Rural/remote includes responses from both “rural” and “geographically isolated/remote” categories. These categories were combined because of the low numbers in the “geographically isolated/remote” responses. The final response of “cannot identify a primary geographic population” was recoded into “missing”.

Satisfaction with remuneration model was used to evaluate income satisfaction as the NPS did not contain a question addressing annual physician income. Satisfaction with remuneration model was categorized into binary “satisfied” and “dissatisfied” responses. The “satisfied” category included “very satisfied” and “satisfied” responses, while the “dissatisfied” category included “neutral”, “dissatisfied” and “very dissatisfied” responses.

Remuneration type was also evaluated, and the variable was categorized into “fee-for-service” (more than 90% of remuneration through fee-for-service billings), “blended” (more than 90% of remuneration through a combination of payment models) and “other” (more than 90% of remuneration through salary, per-diem, contract, capitation or other remuneration types). A 90% cut-off was used to clearly reflect the primary payment model per physician. A 75% cut-off was also calculated to ensure that there was not a significant difference in the results with a lower percentage-per-remuneration model. As

there was not a significant difference in the categorical make-up, the 90% cut-of was used as this is the standard that NPS uses in reporting its remuneration results[56].

A full copy of the survey can be found in Appendix C.

Analysis

Statistical Package for the Social Sciences (SPSS) version 22 was used to analyze the weighted family physician portion of the NPS dataset. The survey responses were weighted to adjust for non-responses for province of residence, type of physician (family physician only vs. specialist), age and gender [44]. The details of the weighting method as reported by the National Physician Survey are included in Appendix D. Analyses were developed by the investigator on a small 30% portion of the full dataset, and the final statistical analyses were carried out by NPS staff on the entire dataset.

Descriptive analysis was performed on all of the independent variables and the mean and distribution of the continuous variables was examined. Distribution of the independent variables age and total hours worked per week were examined and found to be normal. These variables were then categorized from continuous to categorical for the analysis.

Each dependent outcome (satisfaction with professional life and satisfaction with work-life balance) was evaluated against each independent variable using chi-square analysis. To further ensure that there was no association between the independent variables, the following relationships were tested: age against number of years licensed, specialist practice against academic involvement, practice type against practice population, hours worked per week against provision of on-call services, remuneration model satisfaction against remuneration model and satisfaction with work-life balance against satisfaction with professional life.

Age and number of years licensed were tested as the older the practitioner, the more likely that their years of licensure are higher. Practice type (specialist or family medicine

only) were tested as it is possible that specialist-family physicians are more likely to work in larger centres, or be associated with teaching facilities. Hours worked per week and provision of on-call service were tested to ensure that there was no association between these working groups. Satisfaction with remuneration model and the remuneration model were tested to ensure that remuneration model alone was not responsible for remuneration model satisfaction. Satisfaction with work-life balance and satisfaction with professional life were also tested to rule out associations between these two independent variables.

Binomial logistic regression was used to examine the relationship between each of the independent variables (satisfaction with professional life and satisfaction with work-life balance). Goodness of fit of the model was tested using the omnibus test of model coefficients.

Missing values were not included in the regression analysis as listwise deletion was used. To check for the impact of missing values, a the regression analysis was conducted with the missing values explicitly coded to check for consistency of the results.

3.3 Results

The 2013 family physician weighted data set from the NPS was used in the calculation of the results. The survey response rate was 17.0%, or 4626 survey responses out of a possible 27 195 family physicians who received the survey. The data was weighted by NPS (methodology found in Appendix D) using an estimated family physician population of 34 753 at the time of survey distribution.

Descriptive statistics

There were more male than female respondents (51.2% vs. 40.3%), with the majority of the responding population falling between forty-five to sixty-four years of age. Most respondents reported being licensed for more than twenty years.

The majority (59.3%) resided in Quebec and Ontario with half of the participants working in an urban or suburban environment. More than half of the respondents described themselves as family medicine specialists (59.6%), and sixty-five percent of the participant physicians were involved in teaching activities.

Most participant physicians were remunerated in a blended model (41.1%), with a third of them remunerated in a fee-for-service model. The majority of participants (53.8%) were satisfied with their remuneration model.

Sixty percent of respondents provided on-call services, and the majority of respondents (43.9%) worked 40-60 hours per week.

With respect to the use of electronic medical records (EMR), sixty percent of respondents reported using them in clinical practice.

More than seventy percent of respondents were satisfied with their professional lives. Almost half of participants were satisfied with their work-life balance.

A summary of the descriptive statistics can be found in Tables 3.2 and 3.3.

Table 3.2: Descriptive statistics – Dependent variables

	%	**n**
Satisfaction with professional life		
Satisfied (very satisfied + satisfied)	72	25009
Not satisfied (neutral +dissatisfied + very dissatisfied)	20.6	7144
Missing	*7.5*	*2600*
Satisfaction with work-life balance		
Satisfied (very satisfied + satisfied)	49	17016
Not satisfied (neutral +dissatisfied+ very dissatisfied)	43.5	15130
Missing	*7.6*	*2607*

Table 3.3: Descriptive statistics – Independent variables

	%	n
Gender		
Male	51.2	17808
Female	40.3	14003
Missing	*8.5*	*2942*
Age group		
<35	9.9	3448
35-44	19.6	6826
45-54	24.5	8528
55-64	25.8	8974
65+	11.5	4011
Missing	*8.5*	*2965*
Province		
Atlantic provinces	8.2	2839
QC	24.9	8653
ON	34.4	11938
MB+SK	6.3	2193
AB	10.9	3800
BC	14.6	5059
Missing	*0.8*	*271*
Number of years licensed to practice medicine		
< 4yrs	13.4	4664
5-9 yrs	11.7	4077
10-14 yrs	9.7	3373
15-19yrs	8.1	2821
20+ yrs	49.2	17112
Missing	*7.8*	*2706*
Type of practice: Family medicine only or focused practice		
Family medicine only	34.7	12068
Focused practice	59.6	20720
Missing	*5.7*	*1966*
Academic involvement		
Teaches	65.1	22622
Does not teach	30.4	10575
Missing	*4.5*	*1557*
Primary practice population		
Inner city	11.4	3954
Urban/suburban	50.3	17495
Small town	14.3	4971
Rural/remote	14.4	5016
Missing	*9.5*	*3317*
Method of Payment		
>90% Fee for service	32.9	11423
>90% Other (salary+capitation+sessional+contract+incentives +other)	17.1	5949
>90% Blended model	41.1	14277
Missing	*8.9*	*3104*

Table 3.3: Descriptive statistics – Independent variables

	%	n
Provides On-Call service		
Yes	59.0	20506
No	32.3	11230
Missing	*8.7*	*3017*
Use electronic records		
Yes	59.8	20768
No	31.9	11076
Missing	*8.4*	*2910*
Total hours worked per week		
<20 hrs	3.9	1341
20-40hrs	21.5	7457
40-60 hrs	43.9	15274
60-80 hrs	15.4	5343
80-100 hrs	5.0	1745
100-120 hrs	2.5	878
> 120 hrs	0.4	123
Missing	*7.5*	*2593*
Satisfaction with remuneration model		
Satisfied (very satisfied + satisfied)	53.8	18685
Not satisfied (neutral +dissatisfied + very dissatisfied)	38.5	13389
Missing	*7.7*	*2679*

Bivariate statistics

Each dependent outcome (satisfaction with professional life and satisfaction with work-life balance) was evaluated against each independent variable using chi-square analysis. Each of these analyses demonstrated a significant association of the independent variables with the dependent outcomes. The summary of these results can be found in Table 3.4.

The relationship of gender with satisfaction with professional life was significant (X^2= 20, n=31 756, p<0.001) with male physicians reporting greater satisfaction than their female counterparts. The association of gender with work-life balance satisfaction was similarly significant with male physicians again being more satisfied with their work-life balance than their female colleagues (X^2= 12, n=31 749, p<0.001).

Age and professional life satisfaction was significant (X^2= 363, n=31 746, p<0.001) with increasing age associated with increased professional life satisfaction up to the 55-64 age group. With respect to work-life balance satisfaction, the relationship was also significant (X^2= 657, n=31 739, p<0.001) with peak satisfaction in the 55-64 age group.

The association of province with professional life satisfaction was significant (X^2= 344, n=31 977, p<0.001) with Quebec and Ontario practitioners having the greatest satisfaction. With respect to work-life balance satisfaction, the relationship was significant (X^2= 66, n=31 969, p<0.001) with Quebec physicians again having the greatest satisfaction.

The number of years of licensure and satisfaction with professional life was significantly associated (X^2= 134, n=32 006, p<0.001) with the most satisfied physicians being those licensed for more than twenty years. Similarly, the association of number of years of licensure and work-life balance satisfaction was significant (X^2= 158, n=31 999, p<0.001) with physicians licensed for more than twenty years reporting the greatest satisfaction.

Family practice type and satisfaction with professional life were significantly associated (X^2= 380, n=30 355, p<0.001) with focused practice physicians reporting greater satisfaction than their generalist counterparts. This association was similarly significant when examining work-life balance satisfaction (X^2= 52, n=30 355, p<0.001), with focused practice family physicians again reporting the greatest satisfaction.

The professional life satisfaction of academic family physicians was significant (X^2= 241, n=32 120, p<0.001), and was greater than their non-academic colleagues. Additionally, with respect to work-life balance satisfaction the relationship was also significant (X^2= 31, n=32 113, p<0.001) with academic family physicians again reporting greater satisfaction.

The relationship of practice population and professional life satisfaction was significant (X^2= 62, n=30 476, p<0.001) with urban/suburban practitioners having greater satisfaction. The relationship of practice population and work-life balance was also significant (X^2= 52, n=30 469, p<0.001), with urban/suburban family physicians again having the greatest satisfaction with their work-life balance.

The association between method of remuneration and professional life satisfaction was significant (X^2= 99, n=30 406, p<0.001) with practitioners paid through a blended model having the greatest satisfaction. With respect to remuneration model and work-life balance satisfaction, this relationship was also significant (X^2= 177, n=30 401, p<0.001), but the physicians paid through the “other” model had the greatest work-life balance satisfaction.

There was a significant association with provision of on-call services and professional life satisfaction (X^2= 58, n=31 086, p<0.001), with those providing on-call coverage reporting greater professional life satisfaction. The relationship between on-call provision and work-life balance satisfaction was also significant (X^2= 428, n=31 079, p<0.001) with the most satisfied practitioners being those who do not provide on-call coverage.

The association between EMR use and professional life satisfaction was significant (X^2= 428, n=31 079, p<0.001) with non-EMR physicians reporting more satisfaction. The relationship between EMR use and work-life balance was also significant (X^2= 118, n=31 131, p<0.001), again with non-EMR users reporting greater satisfaction.

The relationship between hours worked per week and professional life satisfaction was significant (X^2= 167, n=31 965, p<0.001) with the most satisfied physicians working the fewest hours. There was a significant association between hours worked per week and work-life balance satisfaction (X^2= 2142, n=31 958, p<0.001), with the greatest satisfaction reported in physicians who worked the fewest hours.

There was a significant relationship between satisfaction with remuneration model and professional life satisfaction (X^2= 2671, n=32 054, p<0.001), with the physicians most satisfied with their income also having the greatest professional life satisfaction. This relationship also held when comparing remuneration model satisfaction and work-life balance satisfaction (X^2= 2974, n=32 047, p<0.001), with the most satisfied physicians with respect to their remuneration model also reporting the greatest work-life balance satisfaction.

Table 3.4: Associations with Professional life and Work-life balance Satisfaction

	Satisfaction with professional life			Satisfaction with work-life balance		
	% satisfied	*% dissatisfied*	*p-value*	*% satisfied*	*% dissatisfied*	*p-value*
Gender			<0.001			<0.001
Male	56.6	53.6		56.9	54.9	
Female	43.4	46.4		43.1	45.1	
Age group			<0.001			<0.001
<35	11.2	9.6		11.9	9.7	
35-44	20.5	24.8		19.1	24.2	
45-54	25.6	31.4		23.6	30.5	
55-64	28.5	27.4		29.3	27.1	
65+	14.2	6.8		16.2	8.5	
Province			<0.001			<0.001
Atlantic provinces	7.7	8.5		8.0	7.8	
QC	27.6	16.9		26.6	23.7	
ON	34.0	38.1		34.6	35.3	
MB+SK	5.8	7.4		5.4	7.1	
AB	10.5	13.1		11.0	11.2	
BC	14.3	16.0		14.5	14.9	
Number of years licensed to practice medicine			<0.001			<0.001
< 4yrs	14.7	14.2		14.2	15.0	
5-9 yrs	12.3	14.4		11.3	14.3	
10-14 yrs	10.0	12.4		9.6	11.5	
15-19yrs	8.3	10.7		8.4	9.3	
20+ yrs	54.8	48.3		56.5	49.9	
Practice type			<0.001			<0.001
Family medicine only	33.8	46.8		34.8	38.8	
Focused practice	66.2	53.2		65.2	61.2	
Academic involvement			<0.001			<0.001
Teaches	70.5	60.8		67.0	69.9	
Does not teach	29.5	39.2		33.0	30.1	
Primary practice population			<0.001			<0.001
Inner city	12.3	12.8		13.1	11.7	
Urban/suburban	55.3	57.5		56.8	54.8	
Small town	16.7	12.8		15.4	16.2	
Rural/remote	15.7	16.9		14.8	17.3	
Method of Payment			<0.001			<0.001
>90% Fee for service	34.6	40.4		36.2	35.7	
>90% Other	18.5	19.2		21.1	15.7	
>90% Blended model	46.9	40.4		42.6	48.6	
Provides On-Call service			<0.001			<0.001
Yes	65.6	60.7		59.1	70.4	
No	34.4	39.3		40.9	29.6	
Use electronic records			<0.001			<0.001
Yes	64.8	67.5		62.6	68.5	
No	35.2	32.5		37.4	31.5	
Total hours worked per week			<0.001			<0.001
<20 hrs	4.2	3.7		6.4	1.6	

	Satisfaction with professional life			Satisfaction with work-life balance		
	% satisfied	*% dissatisfied*	*p-value*	*% satisfied*	*% dissatisfied*	*p-value*
20-40hrs	23.1	22.7		30.5	14.7	
40-60 hrs	48.9	43.1		45.4	50.2	
60-80 hrs	15.7	19.8		12.1	21.8	
80-100 hrs	4.9	7.5		3.5	7.7	
100-120 hrs	2.7	2.7		1.9	3.7	
> 120 hrs	0.4	0.4		0.3	0.5	
Satisfaction with remuneration model			<0.001			<0.001
Satisfied	65.8	31.5		72.4	42.3	
Dissatisfied	34.2	68.5		27.6	57.7	

The relationship between age and number of years licensed was significant (X^2= 29 129, n=31 709, p<0.001) with older physicians licensed for a greater number of years. Satisfaction with remuneration model and remuneration model was also a significant relationship (X^2= 813, n=30 346, p<0.001), with family physicians in a blended remuneration model the most satisfied with their remuneration type. Practice type and academic involvement was similarly significant with more focused practice family physicians involved in academic practice than their general practice colleagues (X^2= 1515, n=31 322, p<0.001). The association between focused-practice family physicians and practice population was significant with a greater number of focused-practice family physicians practicing in inner city and urban/suburban environments (X^2= 282, n=29 620, p<0.001). The number of hours worked per week and the provision of on-call services also demonstrated a significant relationship (X^2= 1282, n=31 103, p<0.001) with the greater the number of hours worked, the more likely that on-call services are provided. Satisfaction with work-life balance and satisfaction with professional life were associated on chi-square analysis (X^2= 3859, n=32 126, p<0.001) with physicians who report being more satisfied with the work-life balance also reporting greater satisfaction with their professional life. The summary of these results is found in Table 3.5 through to Table 3.10.

The above variables were all maintained in the regression model. The significant association between these six pairs of independent variables was considered important to the understanding of the regression analysis, but the individual variables were each

considered important enough in the overall assessment of professional and work-life balance satisfaction that their place in the multivariate analysis was maintained.

Table 3.5: Association of age with number of years licensed

	Number of years licensed				
	% licensed < 4 years	*% licensed 5-9 years*	*% licensed 10-14 years*	*% licensed 15-19 years*	*% licensed > 20 years*
Age					
< 35 years old	54.5	23.5	0	0	0
35-44 years old	30.8	51.0	65.5	39.7	0.1
45-54 years old	12.4	18.7	25.7	50.0	29.0
55-64 years old	2.1	6.3	8.1	9.1	47.7
> 65 years old	0.2	0.5	0.7	1.1	23.1

X^2= 29 129, n=31 709, p<0.001

Table 3.6: Association of remuneration model satisfaction with remuneration model

	Remuneration model		
	% with >90% fee for service remuneration	*% with > 90% other remuneration*	*% with > 90% blended remuneration*
Satisfaction with remuneration model			
Satisfied	48.7	70.1	63.7
Dissatisfied	51.3	29.9	36.3

X^2= 813, n=30 346, p<0.001

Table 3.7: Association of practice type with academic involvement

	Academic involvement	
	% who teach	% who do not teach
Practice type		
Family physician only	29.5	52.3
Focused practice	70.5	47.7

X^2= 1515, n=31 322, p<0.001

Table 3.8: Association of family practice type and practice population

	Practice population			
	% inner city	*% urban/suburban*	*% small town*	*% rural/remote*
Practice type				
Family physician only	32.6	41.4	38.5	29.3
Focused practice	67.4	58.6	61.5	70.7

X^2= 282, n=29 620, p<0.001

Table 3.9: Association of total hours worked per week and provision of on-call

	Provision of on-call	
	% provides on-call	% does not provide on-call
Total hours worked per week		
< 20 hours	2.9	6.0
20-40 hours	18.0	31.9
40-60 hours	49.2	45.1
60-80 hours	20.2	11.1
80-100 hours	6.4	3.7
100-120 hours	2.7	2.0
> 120 hours	0.6	0.1

X^2= 1282, n=31 103, p<0.001

Table 3.10: Association of satisfaction with professional life and satisfaction with work-life balance

	Satisfaction with work-life balance	
	% satisfied	% dissatisfied
Satisfaction with professional life		
Satisfied	91.4	62.5
Dissatisfied	8.6	37.5

X^2= 3859, n=32 126, p<0.001

Multivariate analysis – Satisfaction with professional life

Binomial logistic regression was used to analyze each of the dependent variables with the independent variables. Table 3.11 summarizes the logistic regression analysis for the professional life satisfaction variable.

Significant associations were noted for age, province, number of years licensed, practice type, academic involvement, practice population, remuneration model, electronic medical record use, number of hours worked per week and satisfaction with remuneration model.

No significant associations were noted for gender or provision of on-call services.

Younger physicians had more than twice the odds of being dissatisfied as compared to their counterparts who were 65 years of age and older.

Compared to those physicians 65 years or older, all younger physicians had more than twice the odds of being dissatisfied. The younger physician results were: <35 years old

(OR=2.63, 95% CI 2.15-3.21), 35-44 years old (OR=2.32, 95% CI 1.96-2.74), 45-54 years old (OR=2.501, 95% CI 2.19-2.88) and 55-64 years old (OR=2.33, 95% CI 2.05-2.65).

Compared to physicians practicing in BC, Quebec physicians had the lowest odds of being dissatisfied with their professional lives (OR=0.76, 95% CI 0.68-0.85), while those family physicians in the Prairie provinces (Manitoba and Saskatchewan) had the highest odds of being dissatisfied with their professional lives (OR=1.41, 95% CI 1.22-1.62).

Compared to those practicing more than twenty years, family physicians licensed less than four years had the lowest odds of being dissatisfied with their professional lives (OR=0.78, 95% CI 0.67-0.90), with physicians in practice between 15 and 19 years having the highest odds of dissatisfaction with their professional lives (OR=1.23, 95% CI 1.08-1.39).

Family physicians in generalist practice had more than one and a half times greater odds of dissatisfaction (OR=1.61, 95% CI 1.50-1.72) with their professional lives compared to their focused-practice colleagues.

Family physicians who are involved in teaching have lower odds of dissatisfaction with their professional lives (OR=0.70, 95% CI 0.65-0.75) than their colleagues who do not have a teaching practice.

Practitioners in urban centres (OR=0.77, 95% CI 0.70-0.84), and small towns (OR=0.62, 95% CI 0.55-0.70), had the lowest odds of dissatisfaction with their professional lives when compared to their rural/remote counterparts.

Family physicians who are paid via multiple or alternative models (capitation/salary/per diem) have the highest odds of professional life dissatisfaction (OR=1.25, 95% CI 1.14-1.37).

Family physicians using an electronic medical record (EMR) have higher odds of dissatisfaction with their professional lives (OR=1.13, 95% CI 1.05-1.22) compared to those not using an EMR.

Family physicians who work 80-100 hours per week had the highest odds of being dissatisfied with their professional lives (OR=1.86, 95% CI 1.14-3.01) when compared to those working more than 120 hours per week.

Family physicians satisfied with their income have 75% lesser odds of reporting professional life dissatisfaction (OR=0.25, 95% CI 0.24-0.27) compared to those who are dissatisfied with their income.

Within the regression analysis, the variance inflation factor ranged from 1.05 to 2.68 for the independent variables, demonstrating low to moderate collinearity. The results are summarized in table 3.12.

Table 3.11: Logistic Regression – Dissatisfaction with Professional Life

Variable	Odds ratio	95% Confidence Interval
Gender (female)	Reference	
Gender (male)	1.00	0.93-1.07
Age (> 65 years old)	Reference	
Age (<35 years old)	2.63	2.15-3.21
Age (35-44 years old)	2.32	1.96-2.74
Age (45-54 years old)	2.51	2.19-2.88
Age (55-64 years old)	2.33	2.05-2.65
Province (BC)	Reference	
Province (Atlantic)	1.12	0.98-1.28
Province (QC)	0.76	0.68-0.85
Province (ON)	1.06	0.96-1.17
Province (MB/SK)	1.41	1.22-1.62
Province (AB)	1.14	1.01-1.29
Number of years licensed (>20)	Reference	
Years licensed (< 4)	0.78	0.67-0.90
Years licensed (5-9)	0.94	0.82-1.07
Years licensed (10-14)	1.03	0.91-1.18
Years licensed (15-19)	1.23	1.08-1.39
Practice type: focused practice	Reference	
Practice type: family medicine only	1.61	1.50-1.72
Academic involvement (none)	Reference	
Academic involvement (teaches)	0.70	0.65-0.75
Practice population (rural/remote)	Reference	
Practice population (inner city)	0.97	0.86-1.09
Practice population (urban)	0.77	0.70-0.84
Practice population (small town)	0.62	0.55-0.70
Remuneration model (blended)	Reference	
Remuneration model (fee for service)	0.93	0.86-1.01
Remuneration model (other)	1.25	1.14-1.37
Provides on-call (no)	Reference	
Provides on-call (yes)	0.96	0.90-1.03
EMR use (no)	Reference	
EMR use (yes)	1.13	1.05-1.22
Hours worked per week (> 120)	Reference	
Hours per week (<20)	1.45	0.89-2.41
Hours per week (20-40)	1.25	0.78-2.02
Hours per week (40-60)	1.14	0.71-1.84
Hours per week (60-80)	1.49	0.93-2.40
Hours per week (80-100)	1.86	1.14-3.01
Hours per week (100-120)	0.85	0.51-1.42
Income satisfaction (dissatisfied)	Reference	
Income satisfaction (satisfied)	0.25	0.24-0.27

Dependent variable coding: dissatisfaction = 1, satisfaction = 0

Table 3.12: Collinearity statistics - Satisfaction with professional life regression

	Tolerance	Variance Inflation Factor
Gender	0.88	1.12
Age	0.37	2.68
Province	0.89	1.13
Number of years of licensure	0.39	2.57
Practice type	0.91	1.10
Academic involvement	0.88	1.14
Practice population	0.95	1.05
Remuneration model	0.87	1.15
Provision of on-call services	0.88	1.13
Use of electronic medical records	0.89	1.12
Total hours worked per week	0.91	1.10
Satisfaction with remuneration model	0.95	1.10

Multivariate analysis – Satisfaction with work-life balance

Binomial logistic regression was used to analyze each of the dependent variables with the independent variables. Table 3.13 summarizes the logistic regression analysis for the work-life balance satisfaction variable.

Table 3.13: Logistic Regression – Dissatisfaction with Work-life Balance

Variable	Odds Ratio	95% Confidence Interval
Gender (female)	Reference	
Gender (male)	0.86	0.82-0.92
Age (> 65 years old)	Reference	
Age (<35)	1.15	0.97-1.36
Age (35-44)	1.90	1.66-2.18
Age (45-54)	1.81	1.63-2.01
Age (55-64)	1.46	1.33-1.61
Province (BC)	Reference	
Province (Atlantic)	0.84	0.74-0.95
Province (QC)	1.330	1.21-1.46
Province (ON)	1.040	0.95-1.14
Province (MB/SK)	1.20	1.05-1.37
Province (AB)	1.03	0.92-1.15
Number of years licensed (>20)	Reference	
Years licensed (<4)	0.94	0.83-1.07
Years licensed (5-9)	0.99	0.88-1.11
Years licensed (10-14)	1.02	0.91-1.14
Years licensed (15-19)	0.86	0.77-0.96
Practice type: focused practice	Reference	
Practice type: family medicine only	1.29	1.22-1.37

Variable	Odds Ratio	95% Confidence Interval
	Reference	
Academic involvement (does not teach)		
Academic involvement (teaches)	0.99	0.93-1.06
Practice population (rural/remote)	Reference	
Practice population (inner city)	0.82	0.74-0.91
Practice population (urban)	0.84	0.78-0.91
Practice population (small town)	0.94	0.85-1.03
Remuneration model (blended)	Reference	
Remuneration model (fee for service)	0.82	0.77-0.87
Remuneration model (other)	0.83	0.77-0.90
Provides on-call (no)	Reference	
Provides on-call (yes)	1.68	1.58-1.78
EMR use (no)	Reference	
EMR use (yes)	1.22	1.15-1.30
Hours worked per week (>120)	Reference	
Hours per week (<20)	0.39	0.25-0.60
Hours per week (20-40)	0.64	0.43-0.95
Hours per week (40-60)	1.48	0.99-2.20
Hours per week (60-80)	2.25	1.51-3.36
Hours per week (80-100)	2.40	1.59-3.62
Hours per week (100-120)	2.11	1.37-3.24
Income satisfaction (dissatisfied)	Reference	
Income satisfaction (satisfied)	0.25	0.23-0.26

Dependent variable coding: dissatisfaction = 1, satisfaction = 0

Significant associations were noted for gender, age, province, number of years licensed, practice type, practice population, remuneration model, electronic medical record use, number of hours worked per week, provision of on-call services and satisfaction with remuneration model.

No significant associations were noted for academic involvement.

Male family physicians had lower odds of dissatisfaction with their work-life balance than their female counterparts (OR=0.86, 95% CI 0.82-0.92).

Family physicians in the 35-44 and 45-54 year-old age groups had the greatest odds of being dissatisfied with their work-life balance ((OR=1.90, 95% CI 1.66-2.18) and

(OR=1.81, 95% CI 1.63-2.01) when compared to their colleagues greater than 65 years of age.

Compared to their BC counterparts, physicians residing in the Atlantic provinces had the lowest odds of dissatisfaction with their work-life balance (OR=0.84, 95% CI 0.74-0.95). Those family physicians residing in Quebec had the greatest odds of being dissatisfied with their work-life balance (OR=1.33, 95% CI 1.21-1.46).

Family physicians with fifteen to nineteen years of licensure had the lowest odds of dissatisfaction with their work-life balance (OR=0.86, 95% CI 0.77-0.96) compared to their colleagues licensed more than twenty years.

Physicians who consider themselves family physicians only had greater odds of dissatisfaction with their work-life balance (OR=1.29, 95% CI 1.22-1.37) when compared to their focused practice colleagues.

Compared to their rural/remote colleagues, inner city (OR=0.82, 95% CI 0.74-0.91), and urban family physicians (OR=0.84, 95% CI 0.78-0.91) had lower odds of dissatisfaction with their work-life balance.

Family physicians compensated through a fee-for-service model (OR=0.82, 95% CI 0.77-0.87), and an "other" model (OR=0.83, 95% CI 0.77-0.90) had lower odds of being dissatisfied with their work-life balance compared to family physicians in the blended remuneration model.

Family physicians who provide on-call coverage have more than 1.5 times greater odds of dissatisfaction with their work-life balance (OR=1.68, 95% CI 1.58-1.78) than those who do not provide on-call coverage.

Family physicians who use electronic medical records have greater odds of dissatisfaction with their work-life balance (OR=1.22, 95% CI 1.15-1.30) compared to their colleagues who do not use electronic medical records.

The odds of work-life balance dissatisfaction are lowest for family physicians who work forty hours or less per week (OR=0.39, 95% CI 0.25-0.60, and OR=0.64, 95% CI 0.43-0.95), compared to their colleagues who work more than 120 hours per week. Family physicians who work between 80-100 hours per week have the greatest odds of dissatisfaction with their work-life balance (OR=2.40, 95% CI 1.59-3.62).

Family physicians who are satisfied with their income have lower odds of dissatisfaction with their work-life balance (OR=0.25, 95% CI 0.23-0.26) when compared to physicians who are dissatisfied with their income.

Within the regression analysis, the variance inflation factor ranged from 1.05 to 2.68 for the independent variables, demonstrating low to moderate collinearity. The results are summarized in table 3.14.

Table 3.14: Collinearity statistics - Satisfaction with work-life balance regression

	Tolerance	Variance Inflation Factor
Gender	0.88	1.13
Age	0.37	2.68
Province	0.89	1.13
Number of years of licensure	0.39	2.57
Practice type	0.91	1.10
Academic involvement	0.88	1.14
Practice population	0.95	1.05
Remuneration model	0.87	1.15
Provision of on-call services	0.88	1.13
Use of electronic medical records	0.89	1.12
Total hours worked per week	0.91	1.10
Satisfaction with remuneration model	0.95	1.06

Missing Analysis

Missing values for each variable in this study ranged from 0.8% to 9.5%. Given the relatively large missing values (greater than 5% for the majority of the independent

variables studied), a separate analysis was done to evaluate the results with the missing values included. The concern prior to performing the analysis was that inclusion of the missing values could change the outcome of the results of the regression analysis.

The missing values were coded as a new category for each independent variable, and the binomial regression analysis was performed on the new independent variables (including missing values). The results did yield some significant differences from the original analysis. The full data tables for the missing analysis can be found in Appendix E.

Firstly, in the missing regression analysis evaluating satisfaction with professional life, five variables had a missing value category that demonstrated a significant association. These included age, province, practice population, EMR use and hours per week.

The age (missing) physicians had greater odds of dissatisfaction with their professional lives than physicians greater than 65 years of age (OR=8.32, 95% CI 6.38-10.84).

Similarly, the province (missing) physicians also had greater odds of dissatisfaction with their professional lives than physicians practicing in British Columbia (OR=2.28, 95% CI 1.37-3.82).

Within the practice population variable, practice population (missing) had lower odds of dissatisfaction with their professional lives (OR=0.72, 95% CI 0.59-0.89), compared to rural/remote practitioners.

The addition of the missing category to the EMR use variable changed the outcome of the regression analysis, and physician use of EMR was not associated with professional satisfaction.

Physicians in the hours per week (missing) category had greater odds of dissatisfaction with their professional lives (OR=3.08, 95% CI 1.80-5.26) than their colleagues working more than 120 hours per week.

The evaluation of the missing data with work-life balance revealed significant associations for the missing category within the variables of age, province, practice type, academic involvement, hours worked per week and income satisfaction.

The physicians in the age (missing) category had greater odds of dissatisfaction with their work-life balance than physicians greater than sixty-five years of age (OR=2.12, 95% CI 1.64-2.75).

The province (missing) physicians had lower odds of dissatisfaction (OR=0.44, 95% CI 0.25-0.77) than their British Columbian counterparts.

Practice type (missing) physicians had greater odds of dissatisfaction (OR=1.71, 95% CI 1.53-1.90) than focused practice physicians (OR=1.17, 95% CI 1.12-1.23).

Missing physicians in the academic involvement variable had increased odds of dissatisfaction with their work-life balance (OR=3.31, 95% CI 1.54-7.12) compared to their non-academic counterparts.

The physicians in hours per week (missing) had increased odds of dissatisfaction (OR=2.31, 95% CI 1.41-3.80) with their work-life balance over the physicians working more than 120 hours per week.

Physicians in the income satisfaction (missing) category had lower odds of dissatisfaction with their income (OR=0.33, 95% CI 0.21-0.51) than the income-dissatisfied physicians.

3.4 Discussion

Overall Satisfaction

Canadian family physicians in this study were overall satisfied with both their professional lives and their work-life balance. However, their professional satisfaction is far greater than their work-life balance satisfaction.

Satisfaction with professional life

Physician gender was not significantly associated with satisfaction with professional life. This is consistent with the current literature on gender in job satisfaction that is equivocal regarding the impact of gender on physician job satisfaction[12,14,25,45,57–66].

The family physicians most satisfied with their professional lives were those greater than sixty-five years of age. This finding is consistent with previous research that described older physicians as being more satisfied than their younger counterparts[67]. The increased satisfaction of older physicians with their professional lives could be due to self-selection. The physicians still practicing at greater than 65 years of age could very well be those who were most satisfied with their professional lives when they were younger. Similarly, younger dissatisfied physicians are unlikely to continue to practice into their older years if there is no anticipated improvement in satisfaction. Hann et al.[68] found that the greater the family physician dissatisfaction, the higher the likelihood of the physician leaving direct patient care.

Quebec physicians had the greatest satisfaction with their professional lives. The least professionally satisfied family physicians reside in Manitoba and Saskatchewan. It is unclear why there is a significant geographic variation in professional satisfaction in Canada. Despite having nationwide universal health coverage, each province manages its own agreements with its physicians. This includes negotiating fee schedules and payment plans as well as creating the administrative framework for delivery of medical services. It is possible that various geographic administrative or ministry-related factors

imbue the job satisfaction of physicians and are partially responsible for the geographic variation in satisfaction.

Family physicians licensed less than four years were the most satisfied with their professional lives, while their colleagues licensed between 15 and 19 years had the lowest satisfaction with their professional lives. The family physicians early in their careers might have the greatest professional life satisfaction as they are the closest to the decision-making process regarding their career and practice type. Those who have been practicing for one to two decades may be at a point in their career where they are contemplating change that has yet to be made. The subsequent uptick of professional satisfaction of physician's licensed for greater than twenty years may reflect practice changes that have been made to improve satisfaction. This is illustrated in previous research by Buchbinder et al.[69] who found that primary care physician dissatisfaction was the primary factor for a physician to leave their particular practice. It was also echoed in Chapter 2 where a number of the physicians who were interviewed noted that they had intentions to change or had previously made changes to their practice to improve their job satisfaction.

Focused practice family physicians are the most satisfied with their professional lives. There is a dearth of research that compares focused-practice family physicians to generalist family physicians, perhaps because focused-practice family physicians form a relatively new group in Canada, with a three-fold increase in focused-practice family physicians from 1996 to 2011[21]. The increased satisfaction noted amongst focused-practice physicians is contradictory to both research that suggests that the variety of work inherent in family medicine is a strong contributor to job satisfaction[6,48], and to the opinion of the physicians interviewed in Chapter 2. Variety of work was a strong theme in our interviews with satisfied family physicians in Ontario. It is possible that the greater satisfaction of focused-practice family physicians arises out of the dissatisfaction with generalist medicine as experienced either in training or in practice. Additionally, the NPS did not clarify what percent of practice time was spent in focused-based care or generalist care. It is possible that a focused practice in fact improves variety of work for

physicians in allowing them to act as specialist-type physicians in addition to providing generalist care.

Family physicians who are involved in teaching are more satisfied with their professional lives than non-academic physicians. This is consistent with previous research that suggests that academic physicians are more satisfied than their non-academic counterparts[11,48,70,71]. This finding could also be related to the previous association noted between focused practice physicians and greater professional satisfaction. Involvement in teaching activities could represent another focus of practice, or an additional item of specialization that is added to a generalist's practice. Additionally, academic involvement could contribute to the continued challenge that physicians in Chapter 2 noted as an important determinant of work satisfaction.

Practitioners in urban centres and small towns were more satisfied with their professional lives than their rural/remote counterparts. This may reflect a more positive balance of access to specialist care and referral in medium-sized centres (over rural/remote locations) while maintaining greater practice variety.

The finding that physicians paid through an "other" model – which comprises salary/capitation/per diem have the lowest odds of professional life satisfaction is somewhat consistent with Gothe et al.'s finding that physicians in capitated models have lower job satisfaction than their fee-for-service colleagues[15]. However, the small numbers of physicians who were each paid via capitation/salary, etc. make it difficult to directly compare this finding with Gothe's research. This finding could have significance for some Canadian jurisdictions that have been moving physician compensation away from fee-for-service towards models that include increased capitation[72]. Green et al. found that physicians in Ontario were more satisfied with their income after moving to primary care models that increased capitation payments and decreased fee-for-service income[72]. However, this finding was complicated by the fact that physician income in the new models increased significantly (anywhere from 10-30%) while physician income in traditional fee-for-service models during the studied time period remained the same[72].

There was no significant difference in the professional life satisfaction of physicians who provide on-call services and those who don't, which is interesting given that increased work hours were related to decreased satisfaction in the same studied cohort. It is possible that providing on-call services adds an additional clinical characteristic to a family physician's day and that this service has inherent qualities, or involves a skill set that contributes to improved satisfaction. For example, the physician who covers obstetrical call may have a general practice during daytime hours, but the addition of call allows her/him to use different clinical skills that would be lost without the call provision. This improves satisfaction despite the extra hours inherent in on-call coverage.

The family physicians in this study who used an electronic medical record reported lower satisfaction with their professional lives. It is possible that the quality of EMRs in this country is contributing to poor satisfaction. Current research in this area suggests that physician satisfaction can be increased if physicians are satisfied with their EMR[9,53–55]. Improving quality of EMRs might improve Canadian family physician satisfaction, which might help national and provincial ministries that are working to increase physician use of EMRs[23].

Family physicians who work 80-100 hours per week had the lowest satisfaction with their professional lives. Those with lower work hours had greater odds of satisfaction with their professional lives in this study. These results are consistent with previous research that finds that a decrease in work hours increases job satisfaction[6,73,74]. The key to interpreting this finding may lie in determining what physicians are doing with their hours worked per week. Are the increased hours spent in providing clinical care, administrative work, research, CME, or other academic pursuits? The dissatisfaction with long work hours may stem from a simple "too many hours per week is unpleasant" or it may stem from spending those hours on undesirable work. The results from Chapter 2 are clear that hours per week spent on administrative activities directly contribute to family physician dissatisfaction.

Satisfaction with remuneration model was used in this study to evaluate physician income satisfaction, and physicians in this study were largely satisfied with their remuneration model. Remuneration model satisfaction was also significantly associated with their professional satisfaction. This is a consistent finding within most of the research evaluating physician income and job satisfaction[4–7,9,16,46,48,51,75,76]. For the majority of the quoted studies, there is a linear relationship between income and job satisfaction. Previous research has also shown that physician satisfaction increases with external rewards, and it is possible that income serves as the most obvious external reward for most physicians[6,11].

Satisfaction with work-life balance

Male physicians were significantly more satisfied with their work-life balance than their female colleagues. There are a number of possible reasons for greater female physician dissatisfaction with their work-life balance, including that many female physicians continue to be responsible for a greater proportion of domestic activities than their partners[77]. This increased responsibility at home may contribute to negative perceptions regarding their work-life balance.

Family physicians in the 35-54 year-old age groups had the greatest dissatisfaction with their work-life balance. The reason for this dissatisfaction is unclear, but it is possible that both workplace and personal life demands increase at this stage for both male and female physicians. Average maternal age in Canada is rising, with an average of fifteen percent of live births occurring in women over the age of 35 from 2006-2009[78]. This represents a 10% increase in maternal age over the previous decade, and there is little evidence to suggest that the trend is reversing[79]. This delay in childbirth for women (both physicians and non-physicians) will shift personal stressors in the work-life balance equation for both men and women to later in life. The dissatisfaction noted in this study may be a reflection of increased demands professionally at the same time as increased demands on the home-front reach a peak.

Physicians practising in the Atlantic provinces had the greatest satisfaction with their work-life balance, while Quebec physicians had the greatest dissatisfaction with their work-life balance. Similar to the findings of professional satisfaction in this research, there is significant geographic variation in work-life balance of Canadian family physicians. It is possible that provincial administration of primary care has a significant impact upon physician satisfaction with the balance of their personal and professional commitments.

Family physicians licensed between 15 and 19 years had the greatest satisfaction with their work-life balance. It is difficult to hypothesize what might be the cause for the increased work-life balance satisfaction amongst this cohort of physicians who also have the poorest professional life satisfaction. Perhaps physicians at this stage in their career have prioritized their work-life balance over their professional lives.

Family physicians with a focused practice are the most satisfied with their work-life balance. As noted earlier, there is a lack of research that compares focused family physicians to generalist family physicians. However, it is possible that the selection of a focused family medicine practice is a result of dissatisfaction with generalist practice. It is also possible that focused practice offers improved work-life balance by providing more reliable workplace hours and responsibilities – as in shift work (emergency medicine), or less call responsibility (sports medicine).

There is no difference in work-life balance between academic and non-academic physicians. This is interesting as some physicians might perceive academic involvement as a threat to their work-live balance. In her research, Dr. Susan Lieff suggests that focusing on the rewards and meaningful work in academic pursuits could aid in retention and recruitment to university departments[80]. The stable work-life balance satisfaction with the increase in professional life satisfaction reported in this study confirms that academic physicians are professionally satisfied, and can achieve this satisfaction without harm to their work-life balance.

Inner city and urban family physicians were more satisfied with their work-life balance than other populations, which may relate to the social and cultural opportunities in larger centres. This is also consistent with our findings that urban physicians are more satisfied in their professional lives as well. This reinforces the known challenges that rural communities face when addressing physician recruitment and lack of physician access in their locales[19,81,82].

The greater work-life balance satisfaction of physicians in both the fee-for-service models and "other" models may suggest that a simpler remuneration approach is preferred for its reliability on work-life balance rather than the blended model (which represented the majority of physician remuneration in this study). The inherent variability in a blended model also makes it difficult to assess whether the reasons for dissatisfaction are related to the blended method of remuneration itself, or to the specific blend of remuneration that each physician respondent received.

Dissatisfaction with work-life balance is greater for physicians who provide on-call services. This is not surprising given that the nature of on-call coverage is that it is often disruptive and can interfere with evening and weekend time. However, when paired with the earlier finding that on-call provision improves professional life satisfaction, physicians may be willing to make the trade-off of improved work satisfaction for the disruption that call inflicts on the work-life balance.

Electronic medical record use was associated with greater dissatisfaction with family physician work-life balance. As noted earlier, it is possible that the dissatisfaction noted in this study is related to physicians being dissatisfied with their EMRs and subsequently with their work-life balance satisfaction. The significance of the dissatisfaction with EMR use seeping from a physician's professional life to her work-life balance is important. As discussed previously, EMR use is increasing across the country, and there is an expectation that physicians will all eventually use an EMR. This amount of dissatisfaction has the potential to impact physician delivery of care, and in turn quality of care for patients. It is unclear from this study if the dissatisfaction seen with EMR use

is secondary to the quality of EMRs used (as reported in previous research[53–55]), or stems from other factors.

Family physicians who work 80-100 hours per week had the lowest satisfaction with their work-life balance. Work-life balance satisfaction is greatest for family physicians who work forty hours or less per week. These results again are consistent with previous research that finds that a decrease in work hours increases job satisfaction[6,73,74]. Additionally, there is no association with work-life balance for physicians who work 40-60 hours per week. This is interesting as less than 80 hours worked per week also had no influence on professional satisfaction in this study. It is possible that there is a level (of approximately 40 hours per week), where physicians will have satisfaction with their work-life balance without impacting their professional life satisfaction.

Physicians in this study were largely satisfied with their income, and income satisfaction was significant for their work-life balance satisfaction. This is a consistent finding within most of the research evaluating physician income and job satisfaction[4–7,9,16,46,48,51,75,76]. For the majority of the quoted studies, there is a linear relationship between income and job satisfaction. As discussed previously, in addition to the intrinsic reward of income, physicians may also perceive higher incomes as an extrinsic reward for their work[6,11].

This study confirmed that Canadian family physicians are satisfied with both their professional lives, and with their work-life balance. However, their work-life balance satisfaction is significantly lower than their professional life satisfaction. Keeton et al. found similar results in their analysis of physician satisfaction and in turn found that there was a relationship between lower work-life balance satisfaction and physician burnout[25].

Missing data analysis

The evaluation of the missing data in this study did provide some areas of caution when interpreting the above results. In the regression analysis of professional life satisfaction, age, province, practice type, practice population and hours per week all had a significant missing data category. There is potential that the lack of data for these variables could

change the results that have been reported. Indeed, with the addition of missing data to the EMR variable, the association between EMR use and professional dissatisfaction was lost. It should be reiterated that the data used in this study was already weighted for over- or under-representation of groups defined by province, type of physician, age and gender (see Appendix D).

In the regression analysis for work-life balance, age, province, practice type, academic involvement, hours worked per week and income satisfaction also had significant missing data categories.

Given the high non-response rate of the NPS, and the significance of the missing data analysis, further research is indicated to ensure that the relationships identified in this study hold out for the greater family physician population in Canada.

3.5 Conclusion

This study confirmed that older physician age, geographic location, academic involvement, urban practice population, capitated or salaried remuneration model, fewer hours worked per week and income satisfaction are associated with professional satisfaction in family physicians. With respect to work-life balance satisfaction, this study confirmed that male gender, older physician age, geographic location, number of years in practice, urban or inner city population, fee-for-service or capitated/salaried remuneration model, lack of on-call provision, fewer hours worked per week and income satisfaction were associated with work-life balance satisfaction in family physicians.

Novel findings in this study included the increased satisfaction that focused-practice family physicians have over their generalist counterparts in both their professional satisfaction and work-life balance satisfaction. Additionally, the use of electronic medical records was a negative predictor of both professional and work-life balance satisfaction in the studied family physicians.

There are a number of limitations in this study with respect to establishing a broad picture of physician satisfaction in Canada. The greatest limitation was that provided within the confines of the National Physician Survey. Due to the nature of this secondary analysis, only certain factors were evaluated in a meaningful way. Important factors that contribute to job satisfaction (as identified through our previous research), such as flexibility, control, collegiality, variety, access to specialist services, administrative load, satisfying personal life and continued professional challenges were not measured. This limited the analysis largely to demographic, geographic, income and extrinsic factors within the profession. The low response rate of this particular NPS survey is also a concern.

The consistency of the results of this study with previous job satisfaction research[2,4,5,7,9,12,14–17,25,45,46,48,59,60,65,66,74,75,83–86], in addition to the novel findings related to family physician specialists and EMR use confirm the importance of evaluating

satisfaction determinants across a national platform such as the National Physician Survey.

This study highlighted the need for future research in a number of avenues. Firstly, the relationship between professional satisfaction and work-life balance should be investigated further. Previous research has focused on work-life balance as a separate determinant of professional satisfaction. However, the consequences of high and low professional versus work-life balance satisfaction on physician employment, burnout, retention and specialty selection could be important to physician access for patients across this country.

Given the increasing proportion of female family practitioners across the country, the finding that female physicians are more dissatisfied with their work-life balance than their male counterparts may have consequences for the overall family physician work force in Canada. It may mean that a change in approach to recruitment and retention efforts will be required in order to avoid future burnout. Primary care reform policies, which are being drafted across the country[87,88] should take into account physician-specific concerns and satisfaction factors.

Additionally, the finding that focused practice family physicians have greater professional and work-life satisfaction is novel and merits further investigation given the increasing number of specialized family physicians in this country. The factors responsible for this increased satisfaction could potentially improve job and work-life balance satisfaction for all family physicians.

Electronic medical record use is increasing across Canada, and its adoption is essential for improved communication amongst physicians, patients and community health services. The findings in this study that the use of EMRs negatively affects family physician job satisfaction warrants further inquiry. Recent research in this area does suggest that physician satisfaction increases with improved quality of electronic medical records[9,53–55]. It is possible that the majority of family physicians are struggling with poor

quality EMRs in Canada, and that manufacturer, provincial government and provincial medical association attention to this matter could improve physician satisfaction, as well as patient care.

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An evaluation of the determinants of job satisfaction in Canadian family physicians

Chapter 4: Conclusion

Job satisfaction as a topic of inquiry was borne out of interest in worker efficiency at the turn of the last century[1]. Interest in improving worker satisfaction persists despite the significant changes in workplaces over the past hundred years. Increasing numbers of women in the work force, increasing demands on worker's time at home and the shift from a focus on industrial efficiency to an appreciation of the importance of intrinsic work factors all contribute to an evolving understanding of job satisfaction as it applies to the modern worker. Given the diversity of the modern workplace, it is not surprising that the determinants of job satisfaction in the general working population are similarly diverse. These factors range from demographic (age, gender) and geographic characteristics (rural versus urban) to income, disposition, and the opportunity for advancement[2].

Physician job satisfaction research echoes many of the above-mentioned determinants and adds in some that are more specific to the nature of medical practice. The doctor-patient relationship, provision of quality care, academic involvement, on-call hours and workplace autonomy and control are all important contributors to physician job satisfaction[3–5].

There is a small, but growing body of research examining the relationship of family physician job satisfaction that echoes many of the findings described above that apply to physicians in general, and to the general working population. Physicians share many characteristics, but individual practice can be quite varied. Family physicians overall tend to report high job satisfaction, with some studies placing them more satisfied than their specialist colleagues[6], and others suggesting that family doctors fall in the middle of their specialist colleagues for job satisfaction[7,3].

Family doctors are the largest group of physicians in this country, and they are essential to the provision of primary care in Canada. Strong primary care systems improve health care outcomes by decreasing all-cause mortality[8]. Keeping a satisfied physician force on the primary care front lines can contribute to both improved patient satisfaction[9], and improved quality of care[10].

Physician dissatisfaction is a key factor in physician burnout and subsequent exit from clinical practice[11–22], and thus should be an important consideration for physician retention.

The goal of this thesis was to examine and more fully evaluate the determinants of family physician job satisfaction. An initial, descriptive qualitative study was performed that used in-depth interviews with family physicians to achieve a broad perspective on their current job satisfaction. The results of this qualitative research helped inform and shape the subsequent multivariate analysis. The multivariate analysis was a secondary analysis of the National Physician Survey. This research addressed additional determinants of job satisfaction and examined the work-life balance satisfaction of family physicians in Canada.

4.2 Thesis findings

The family physicians interviewed for the qualitative analysis (as described in Chapter 2) were satisfied with their job satisfaction. There were nine clear determinants identified within the research and these included flexibility, control, collegiality, variety, access to specialist services, administrative load, satisfying personal life, work-life balance and continued challenges in the profession. Female physicians were more likely to find that electronic medical record use was a negative determinant to their job satisfaction, and male physicians were more likely to cite patient obligations as negatively affecting their job satisfaction. Overall, there was no gender difference in these determinants.

The multivariate analysis of the 2013 National Physician Survey described in Chapter 3 found that family physicians are satisfied with their professional lives, and that the following ten factors were contributed significantly to this satisfaction: age, province, number of years licensed, practice type, academic involvement, practice population, remuneration model, EMR usage, hours worked per week and income satisfaction. Family physician's satisfaction with their work-life balance was significantly lower than their professional satisfaction and was determined by these eleven factors: female gender, age, province, number of years licensed, practice type, practice population, remuneration model, EMR usage, hours worked per week, on-call provision and income satisfaction.

When examined together, these two studies combine to form a full picture of the job satisfaction of family physicians in this country. The qualitative analysis revealed the importance of both extrinsic and intrinsic factors to family physician work satisfaction while the multivariate analysis clearly demonstrated a difference between family physician professional and work-life balance satisfaction when examining extrinsic factors.

The tables below summarize the relationship of each of the above determinants to family physician job satisfaction.

Table 4.1: Summary of Job Satisfaction results

	Positive determinant	Negative determinant	Qualitative or Multivariate analysis
Flexibility	•		Q
Control	•		Q
Collegiality	•		Q
Variety	•		Q
Specialist access	•		Q
Satisfying personal life	•		Q
Continued challenge in work	•		Q
Work-life balance	•		Q
Administrative load		•	Q
"Other" remuneration model		•	M
EMR use		•	Q/M
Age > 65	•		M
Quebec resident	•		M
Prairie resident		•	M
< 4 years in practice	•		M
Focused family physician	•		M
Academic involvement	•		M
Urban/small town resident	•		M
Income satisfaction	•		M

Table 4.2: Summary of Work-Life Balance Satisfaction results

	Positive determinant	Negative determinant
Atlantic province resident	•	
15-19 years of licensure	•	
Focused family physician	•	
Inner city/urban resident	•	
Fee-for-service and "other" remuneration	•	
< 40 hours per week	•	
Income satisfaction	•	
Female gender		•
35-54 years of age		•
EMR use		•
Quebec resident		•
Provision of on-call services		•

The findings from this research largely confirm the significance of a number of factors to the professional and work-life balance satisfaction of family physicians. Novel findings include an overall dissatisfaction with electronic medical record use and satisfaction of focused family physicians.

4.3 Implications of Research Findings

Family physician job satisfaction has important implications with respect to physician retention and burnout, patient satisfaction, and the provision of quality care[11–14,16–25]. The good news is that Canadian family physicians are satisfied with their professional lives. Satisfaction with work-life balance is lower than professional satisfaction, but remains positive.

Apart from the determinants confirmed in this study that are described in previous research, dissatisfaction with EMR use and satisfaction with focused family medicine practice are novel findings.

The dissatisfaction with electronic medical records noted by female physicians in the qualitative study and found amongst all family physicians in the multivariate analysis. The challenge with this finding is the cause of the EMR dissatisfaction is unknown. The qualitative study suggested that the quality of the EMR was the cause of dissatisfaction, which is consistent with previous research[26–29]. However, this conclusion cannot be drawn from the multivariate analysis as further details regarding the nature of the EMR dissatisfaction were not obtained. Future research investigating EMR satisfaction in Canada would clarify whether this is a nation-wide issue with the quality of the electronic medical records. This could have potential consequences for governments and administrative bodies that are encouraging increased EMR adoption across Canada.

This is the first study to examine the impact of focused family physician practice on job satisfaction. As family physicians in Canada continue to become more focused in their clinical practices, this opens up new avenues for future research. Focused practice family

physicians were more satisfied than their generalist colleagues, and this could have implications for primary care in this country. The increased job (and work-life balance) satisfaction of focused family physicians is positive for those physicians and their patients. However, this leads to further questions regarding the provision of primary care in Canada. If more family physicians choose focused practice, will we see an even greater lack of access to primary care for our patients?

The results of both the qualitative and quantitative analysis confirm the importance of factors from workplace flexibility and physician control to work-life balance to physician job satisfaction. Appreciation of these factors can be helpful for residency programs recruiting family medicine residents, as well as for communities who are eager to recruit and retain family physicians. More systemic changes addressing specialist access and administrative responsibilities might be better addressed by regional administrative policies or provincial initiatives. Provincial medical associations could play a role in advocating for change at this level in order to improve physician retention[42].

Addressing the factors that contribute to family physician satisfaction can have significant impact on physician recruitment, retention and on patient outcomes. This thesis contributes to the growing body of research in the field and highlights the need for future research with respect to focused practice family physician satisfaction, and the impact of electronic medical record adoption on physician satisfaction.

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Appendices

Appendix A: Ethics Approval

Office of Research Ethics

The University of Western Ontario
Room 00045 Dental Sciences Building, London, ON, Canada N6A 5C1
Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. E. Wong
Review Number: 13595E **Review Level:** Expedited
Review Date: September 10, 2007
Protocol Title: Are there gender differences in the determinates of job satisfaction across different family medicine practice types?
Department and Institution: Family Medicine, St. Joseph's Health Care London
Sponsor:
Ethics Approval Date: October 4, 2007 **Expiry Date:** July 31, 2008
Documents Reviewed and Approved: UWO Protocol, Letter of Information, Telephone Script.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced study on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

Chair of HSREB: Dr. John W. McDonald

Ethics Officer to Contact for Further Information			
☐ Janice Sutherland (jsutherland@uwo.ca)	☐ Jennifer McEwen (jmcewen4@uwo.ca)	☑ Grace Kelly (gkelly2@uwo.ca)	☐ Denise Grafton (dgrafton@uwo.ca)

This is an official document. Please retain the original in your files.

cc: ORE File
LHRI

Appendix B: Interview Guide for One-on-One Qualitative Interviews

Appendix B: Interview Guide for One-on-One Qualitative Interviews

Demographics

- Age
- Marital status
- Number of children
- Number of years in practice
- Current practice type and place
- Number of years in current practice
- Hours spent in practice (per week or per day)
- Previous types of practice(s) and hours spent in practice per unit of time
- Changes in practice in the past ? years
- Anticipated changes in practice in the next ? years

1. What influenced your decision to enter family medicine?
    - How important were lifestyle issues in this decision?
    - Was it a decision that you perceived at the time to be able to give you job satisfaction?

2. Did your career influence your family choices? (i.e. marriage, children, number of children?)

3. How would you describe your current satisfaction/dissatisfaction with your career?
    - Could it be improved? How?
    - Has it changed over the course of your career?

4. How would you describe your current satisfaction/dissatisfaction with your work/life balance?
    - Could it be improved? How?
    - Has it changed over the course of your career?

5. What do you think is the most important factor contributing to satisfaction in your career?
    - Why?
    - Has this factor changed over the course of your career? (Would you have named a different factor 5/10/15 years ago?)

6. What other factors are important to your job satisfaction? Please rank them in order of importance.
    - Possible factors:
        - Workplace stress

- Number of hours/wk worked
- Amount of call
- Workplace relationships/collegiality
- Practice type
- Practice location
- Number of years in practice/experience in the practice
- Satisfaction in personal life
- Spousal support at home
- Income
- Personal control over career
- Access to specialist services

7. Have you changed the course of your career because dissatisfaction with your professional life?
    - If so, did the change improve your professional satisfaction?

8. Have you changed the course of your career because dissatisfaction with your personal life?
    - If so, did the change help?

9. How much control do you feel you have over your work life?
    - Would you like to have more control?

10. If you could change one thing about your current professional life, what would it be?
    - Workplace?
    - Work hours?
    - Practice type?
    - Administrative duties?
    - Academic obligations?

11. How important is work/life balance to your job satisfaction?
    - Do you feel that your job satisfaction is separate from your home life?

12. How do you balance your personal and professional life?
    - Are there any changes to the balance you would like to make?
    - Any changes that you have tried to make? What was the outcome?

Appendix C: National Physician Survey 2013 Questionnaire

NATIONAL PHYSICIAN SURVEY SONDAGE NATIONAL DES MÉDECINS

Please enter your Identification Number. _____

Are you:

- a licensed physician in full or part-time practice, a locum, in a medically related field, or on a leave of absence.
- a student, resident or are completely retired

1. **Are you (select all that apply):**
   - Certified by the CFPC?
   - Certified by the Royal College?
   - Certified by the CMQ?
   - Certified outside Canada?
   - None of the above

2. **Would you describe yourself as a:**
   a) Family Physician
   b) Other Specialty Physicians

2i. (if 2=a) Is your practice focused in any of the following areas?

- None
- Addiction Medicine
- Chronic Non-Cancer Pain
- Developmental Disabilities
- Child and Adolescent Health
- Emergency Medicine
- Family Practice Anesthesia
- Global Health
- Health Care of the Elderly
- Hospital Medicine
- Maternity and Newborn Care
- Mental Health
- Occupational Medicine
- Palliative Care
- Prison Health
- Respiratory Medicine

- Sport and Exercise Medicine
- Other _____

2i. [if 2=b] Select all of your current certifications (specialties, sub-specialties) from the following menu: [this question will be columnar tick boxes]

- Anatomical Pathology
- Anesthesiology
- Cardiac Surgery
- Dermatology
- Diagnostic Radiology
- Emergency Medicine
- General Pathology
- General Surgery
- Hematological Pathology
- Internal Medicine
- Medical Biochemistry
- Medical Genetics
- Medical Microbiology
- Neurology - Adult
- Neurology - Pediatric
- Neuropathology
- Neurosurgery
- Nuclear Medicine
- Obstetrics & Gynecology
- Ophthalmology
- Orthopedic Surgery
- Otolaryngology - Head and Neck Surgery
- Pediatrics - General
- Physical Medicine & Rehabilitation
- Plastic Surgery
- Psychiatry
- Public Health and Preventive Medicine
- Radiation Oncology
- Urology
- Vascular Surgery
- Adolescent Medicine
- Cardiology - Adult
- Cardiology - Pediatric
- Child and Adolescent Psychiatry
- Clinical Immunology & Allergy - Adult
- Clinical Immunology & Allergy – Pediatric
- Clinical Pharmacology & Toxicology
- Colorectal Surgery
- Critical Care Medicine – Adult

- Critical Care Medicine - Pediatric
- Developmental Pediatrics
- Endocrinology & Metabolism – Adult
- Endocrinology & Metabolism – Pediatric
- Forensic Pathology
- Forensic Psychiatry
- Gastroenterology - Adult
- Gastroenterology - Pediatric
- General Internal Medicine
- General Surgical Oncology
- Geriatric Medicine
- Geriatric Psychiatry
- Gynecologic Oncology
- Gyn. Reproductive Endocrinology & Infertility
- Hematology
- Infectious Diseases – Adult
- Infectious Diseases – Pediatric
- Maternal Fetal Medicine
- Medical Oncology
- Neonatal Perinatal Medicine
- Nephrology – Adult
- Nephrology – Pediatric
- Neuroradiology
- Occupational Medicine
- Pain Medicine
- Pediatric Emergency Medicine
- Pediatric Surgery
- Pediatric Hematology/Oncology
- Pediatric Radiology
- Respirology – Adult
- Respirology – Pediatric
- Rheumatology – Adult
- Rheumatology – Pediatric
- Thoracic Surgery
- Family Medicine

2ii. Select the specialty/sub-specialty certificate that is most closely related to the main area of your current practice:

Repeat same table as above. [drop down box]

2iii. (Subspecialists only – list provided by RC) Select the statement that best describes your scope of practice:

- I am practicing in the area of my sub-specialty only
- I am practicing in the area of my primary specialty and my sub-specialty
- I am practicing in the area of my primary specialty only
- Other, please specify _____.

2iv. Select the focus of your practice and describe the focus:

- Full scope of my specialty/sub-specialty:
- Limited to particular diseases/conditions. Describe the focus: _____
- Limited to particular treatments/procedures. Describe the focus: _____
- Limited to particular organs/part of the anatomy. Describe the focus: _____

3a. In the last TWO years to what extent have you experienced change in the following:

	Major decrease	**Minor decrease**	**No change**	**Minor increase**	**Major increase**	**N/A**
Need for services I provide						
Services I offer are being provided by other health professionals						
Supply of physicians in my specialty						
Restrictive policies or privileges						

3b. Rate YOUR access to the following:

	Excellent	Satisfactory	Unsatisfactory	N/A
Operating Room				
Endoscopy Suites				
Procedural rooms				
Anesthetist				
Nurses				
Technicians				
Social workers				
Publicly funded physiotherapists				
Publicly funded occupational therapists				
Dieticians				
Hospital beds				
MRI scans				
CT scans				
PET scans				
Quality equipment e.g. microscopes, analyzer, computers				
Physical space				
Electronic health records				

3c. Are there any clinical, therapeutic, diagnostic, or procedural activities within the domain of your discipline carried out by "other" health professionals?

- **Yes**
- **No**

3ci (If 3c=Yes) Please specify up to three health professionals and the components of your specialty domain they provide.

Other health professions dropdown	**Components provided, please specify: _____**
Other health professions dropdown	**Components provided, please specify: _____**
Other health professions dropdown	**Components provided, please specify: _____**

4. Describe your current employment situation.

a) Overworked in my discipline
b) Employed in my discipline to my satisfaction
c) Underemployed in my discipline
d) Not employed in my discipline

4i. (if 4=c or 4=d) How will you address your underemployment or unemployment within the next TWO years? (Check all that apply)

- No plans
- Underemployed by choice
- Seek optimal employment in my discipline
- Seek employment outside my discipline
- Pursue further medical training
- Pursue other education
- Move within Canada
- Leave Canada
- Leave medicine

5. With reference to the LAST 2 YEARS, check all the changes you have already made. For the NEXT 2 YEARS, check all the changes you plan to make.

	Last 2 Years	Next 2 Years
Retire from clinical practice		
Reduce weekly work hours (excluding on-call)		
Increase weekly work hours (excluding on-call)		
Reduce on-call hours		
Increase on-call hours		
Reduce scope of practice		
Increase scope of practice		
Add an area of focus/special interest to your practice		
Change discipline/medical specialty		
Join or expand to a larger group/team of physicians or other health professionals		
Leave a rural area to practise in an urban area		
Leave an urban area to practise in a rural area		
Relocate my practice to another province/territory in Canada		
Practise in the USA		

5i. FP/GP only. If checked "yes" to Added an area of focus/special interest – What area did you focus your practice in? [provide dropdown of SIFPs from Q2a+Other]

5ii. FP/GP only. If checked "yes" to Plan to add area of focus/special interest – What area are you planning to focus in? [provide dropdown of SIFPs from Q2a+Other]

6a. In the last year, approximately what proportion of your professional income did you receive from these payment methods? Note: TOTAL MUST EQUAL 100%.

- Fee-for-service insured
- Fee-for-service uninsured (private pay services)
- Salary
- Capitation
- Sessional/per diem/hourly
- Service contract
- Incentives and premiums
- Other

6b. Are you remunerated for teaching beyond payment for clinical services?

- Yes
- No
- Do not teach

6bi. (If 6b=Yes) What is the source of your teaching remuneration? Check all that apply.

- Paid directly by department/faculty of medicine
- Paid via an alternate funding or payment arrangement (AFP, APP)
- Paid directly by the provincial ministry of health
- Paid through a practice plan
- Other, please specify _____

7. Do you provide patient care? Yes /No (If No skip to 15)

8. (If 7= yes) How is your MAIN patient care setting organized? Check ONLY ONE. (Note that a solo or group practice could also include another health professional who does not have her/his own caseload).

- Solo practice
- Group practice
- Interprofessional practice

9. With respect to your MAIN patient care/practice setting, describe the population PRIMARILY served by you in your practice. Check ONLY ONE.

a) Inner city
b) Urban/suburban
c) Small town
d) Rural
e) Geographically isolated/remote
f) Cannot identify a primary geographic population

9i. Please provide the 6-digit postal code of your MAIN patient care setting OR main work setting:

9ii. Was there a return of service provision attached to your first practice location?

- Yes
- No

9iii. Did you receive an incentive (financial or otherwise) to set up your current practice?

- Yes
- No

9iv. Do you currently or will you eventually receive a retention bonus to remain in your community?

- Yes
- No

9v. (FP/GPs only) Are the majority of your patients rostered?

- Yes
- No

9vi. (If 13=c, d or e) What improvements would most influence you to remain in rural practice? Check ALL that apply:

- Opportunities for CME/CPD
- Access to hospital facilities and services
- Access to other medical facilities and equipment
- Alternate funding payment arrangements
- Emergency transportation services
- Access to short and long term beds
- More reasonable workload
- Availability of locums
- Better education opportunities for my children
- Job opportunities for spouse/partner
- More multidisciplinary team support
- Ability to reduce on-call duties

10. Do you have active hospital privileges?

- Yes
- No

10i. (if 10=No) Does the lack of active hospital privileges negatively affect your practice?

- Yes
- No

11. Do you use or refer patients to any of the following services?

Services	For Mental Illness	For Diabetes	For Cancer Care
Group medical visits			
Inter-disciplinary team or shared care			
Telephone support hotline			
Patient support groups (phone or in-person)			

11a. (Internal Medicine Specialists only) Do you engage in extended (long-term) supervision of your patients suffering from chronic diseases?

- Yes
- No

12. Do you use electronic records to enter and retrieve clinical patient notes in the care of your patients?

- Yes
- No

12i. (If 12=yes) How long have you been using the electronic records in your practice.

- Less than a year
- 1-2 years
- Over two years

12ii. (If 12=yes) Since electronic records were implemented, the productivity at your medical practice has:

- Greatly Increased
- Increased
- Did not change
- Decreased
- Greatly Decreased
- Not sure

12iii. (If 12=yes) How has the quality of the patient care you provide changed since electronic records were implemented?

- Much better
- Better
- No change
- Worse
- Much worse
- Not sure

13. How many <u>hours per week</u> do you spend completing administrative forms on behalf of your patients (e.g. third party insurance forms)? ___ hours / per week

14. Do you provide on-call services?

- Yes
- No

14i. (If 14=yes) Estimate your average number of on-call work hours <u>per month</u>: ___
14ii. (If 14=yes) Estimate how many of your on-call hours each month are actually spent in <u>direct patient care</u> (e.g., phone, email, face-to-face): ___

15. <u>EXCLUDING ON-CALL ACTIVITIES</u>, how many HOURS IN AN AVERAGE WEEK do you usually spend on the following activities? Assume each activity is mutually exclusive for reporting purposes (i.e., if an activity spans two categories, please report hours in only one category).

a) Direct patient care without a teaching component, regardless of setting
b) Direct patient care with a teaching component, regardless of setting
c) Teaching/Education without direct patient care (contact with students/residents, preparation, marking, evaluations, etc.)
d) Indirect patient care (charting, reports, phone calls, meeting patients' family, etc.)
e) Health facility committees (academic planning committees)
f) Administration (i.e., management of university program, chief of staff, department head, Ministry of Health, etc.)

g) Research (including management of research and publications)
h) Managing your practice (staff, facility, equipment, etc.)
i) Continuing medical education/professional development (courses, reading, videos, tapes, seminars, etc.)
j) Other

TOTAL HOURS WORKED PER WEEK

16. How many weeks (out of 52) did you work in the last year? ___

17a. What best describes your work setting(s). Check ALL that apply.

- Private office/clinic (excluding free standing walk-in clinics)
- Community clinic/Community health centre
- Free-standing walk-in clinic
- Academic health sciences centre (AHSC)
- Non-AHSC teaching hospital
- Community hospital
- Other hospital
- Emergency department (in community hospital or AHSC)
- Nursing home/ Long term care facility / Seniors' residence
- University
- Research Unit
- Free-standing lab/diagnostic clinic
- Administrative office / Corporate Office
- Other, please specify: _____

17b.Of the settings you identified, which is your primary work setting? Pick one.
[Select from a drop down list of those identified in 17a]

18. Rate your satisfaction with these aspects of your practice

	Very Satisfied	**Satisfied**	**Neutral**	**Dissatisfied**	**Very Dissatisfied**
Your professional life					
The balance between your personal and professional commitments					
Your remuneration model					

19. Where did you complete your medical training? Pick ONE location per category.

UG = Undergraduate medical graduation (medical school)
PG = MOST RECENT post-graduate medical training (i.e. residency/internship).

Location	UG	PG	Location	UG	PG
University of British Columbia			Queen's University		
University of Calgary			Universite de Sherbrooke		
University of Alberta			Universite de Montreal		
University of Saskatchewan			McGill University		
University of Manitoba			Universite Laval		
University of Western Ontario			Dalhousie University		

Northern Ontario School of Medicine			Memorial University		
McMaster University			U.S.A.		
University of Toronto			Please Specify Other Country UG _____		
University of Ottawa			Please Specify Other Country PG _____		

20. In what year did you become licensed to practice medicine in Canada for the first time? _____

21. Do you hold any other post-graduate degrees? YES NO

21i. If YES in 21, the following appears:
Please indicate <u>all post-graduate degrees.</u>

☐ Master's degree(s) Check all that apply
- Biomedical/life sciences area of study
- Natural sciences/engineering/computer science/architecture area of study
- Business/commerce/law/political science/economics related area of study
- Arts/humanities/languages/communication/theology area of study
- Social sciences/education/library science area of study
- Other field:_____

☐ Doctorate(s) *Check all that apply*
- Biomedical/life sciences area of study
- Natural sciences/engineering/computer science/architecture area of study
- Business/commerce/law/political science/economics related area of study
- Arts/humanities/languages/communication/theology area of study
- Social sciences/education/library science area of study
- Other field:_____

22. Your year of birth

19 __

23. You are:
- Male
- Female

24. The ability to track a cohort of individuals over time provides invaluable research information for health human resource planning. Are you willing to have these responses linked to your responses on future National Physician Surveys? Results from this cohort data would only be reported in aggregate form, never at the individual level.
- Yes, I am willing to be part of the National Physician Survey cohort.

We greatly appreciate the time you have given us to complete this important survey. Please be assured that your response to this survey will be held in the strictest confidence. Analysis and publication of results will be at the aggregate level only. For information on how to collect CPD credits for completing this survey, please go to:

Appendix D: National Physician Survey 2013 Complete Methodology

National Physician Survey (NPS): Introduction

The National Physician Survey (NPS) is an ongoing collaborative initiative led by the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and the Royal College of Physicians and Surgeons of Canada (Royal College), with technical support from the Canadian Institute for Health Information (CIHI). All practicing physicians, medical residents and medical students in Canada are surveyed about what they are doing (or intend to do) in their practices in response to both societal needs and personal and professional interests. The overall goal is to compile a comprehensive database documenting the practices, medical education and training, and familial contexts of current and future physicians in Canada.

2013 National Physician Survey (NPS): Methodology/Design

The 2013 NPS evolved from questions used in the previous editions of the survey (2004, 2007, and 2010), but with a focused theme on ***employment opportunities and challenges*** of physicians in Canada. A working group was implemented to review and refine the questions from previous survey editions. Additional consultative input was sought from other health-related organizations. The goal of the refinement process was to reproduce a concise, user-friendly questionnaire.

The 2013 NPS targeted the following constructs: current employment status, hours of work, practice profile, professional satisfaction, changes in work plan, service population, access to resources, choice of practise and location, method of remuneration, use of electronic records, and chronic disease management. The rationale for the questionnaire content was:

1. To repeat questions from earlier surveys;
2. To improve questions from previous editions of the NPS;
3. To focus on employment opportunities and challenges for Canadian physicians;
4. To add new questions in response to new and/or developing issues.

The survey consisted of 24 questions, mostly close-ended. Some questions consisted of several sub-sections, and thus a fully completed survey included about 100 data points with the cumulative number of responses amounting to more than half a million data points. While some questions were intended for family physicians/general practitioners, other questions targeted other specialists (e.g. medical, internal medicine, laboratory, and surgical specialists). Most importantly, the demographics (i.e., by province, gender, age group, physician type) facilitated research and policy development for particular cohorts of physicians or patient populations.

The questionnaire and survey communications were available in both English and French. The questions were piloted in the winter of 2012 with a variety of physician committees and national specialty societies, and finalized in March 2013. The survey received ethical approval form University of Saskatchewan Behavioural Research Ethics Board in January, 2013.

2013 National Physician Survey (NPS): Mailing List & Data Collection

Mailing List

The 2013 NPS was carried out as a voluntary self-reported online survey of all physicians licensed to practise in Canada. The email contact lists were generated from the NPS Masterfile. The NPS Masterfile was populated with information from the CMA membership system, the CFPC membership database, and the Royal College membership database. The CMA membership system included all physicians in Canada holding a medical license, and is compiled and updated on a daily basis with information received from provincial licensing bodies, associations, CFPC and Royal College membership listings, and individual physicians. However, only email addresses of CMA members could be used for survey research so the list was supplement with information provided by CFPC and the Royal College. All licensed physicians in full or part-time practice, locums, or employed in a medically related field, or on leave were eligible to respond to the survey. Medical students, residents, and retired physicians were not eligible.

Once fully populated, an NPS survey ID, not related to any existing member ID in any of the membership databases, was assigned to each record in the NPS Masterfile. The total number of cases in the NPS mailing database was 77,279. Email invitations contained a link to the e-questionnaire along with a unique identification number. These numbers were used to ensure that physician responses would remain confidential, to enable subsequent emailing of the questionnaire to be sent only to physicians who had not yet replied, and to provide the opportunity to apply the same numbers to future NPS surveys for longitudinal analysis, if permission was granted by the individuals.

Data Collection

The invitation e-mail and reminders were sent by Ottawa Lettershop to all practising physicians in the NPS mailing database for whom a valid email address was available. Communications were sent either in English or French, depending on the physician's preferred language of correspondence. It was estimated that respondents would take 15 to 20 minutes to complete the questionnaire.

Of the 77,279 cases in the NPS mailing databases, 60,225 physicians were directly contacted through email. The remaining physicians did not have a functioning email address to participate (but were accounted for by applying the weighting method; please see section below: *Sampling weights, estimation weights, and non-response adjustments*).

The data collection period lasted April 2 – May 31, 2013. Physicians were contacted on four separate occasions.

- An invitation to participate was sent on April 2, 2013.
- First reminder was sent on April 15, 2013.
- Second reminder was sent on April 29, 2013.
- A final reminder was sent on May 14, 2013.

All responses were captured directly into one database.

Upon completion of the survey, participating physicians were eligible for a cash prize draw. There were two $1,000 prize draws available - one for early bird completion and one for all who participated. At the end of the survey, physicians were automatically directed to the online prize draw form. The early bird prize draw was carried out on May 10, 2013 for participants who completed the survey by May 3, 2013 and the second prize draw was carried out on June 21, 2013 for all participants who completed the survey during the data collection period. The winners' contact information was, and remains, completely separate from the questionnaire responses.

2013 National Physician Survey (NPS): Response Rate

Of the 60,225 physicians contacted, 266 were found to be ineligible. An additional 62 physicians took advantage of the NPS ID finder which allowed any physician to complete the survey if they had heard about it. As such, of the 60,021 physicians invited to complete the 2013 NPS, 10,487 replied to the survey for an overall study response rate of 17.5 %.

National level estimates based on the 2013 NPS study results are considered accurate within +/- 1.0%, 19 times out of 20.

Sampling Weights, Estimation Weights, and Non-response Adjustment

Using weights to adjust for non-responses

Non-responses are typical of a census. Non-responses in the 2013 NPS were due to physicians refraining from responding to the survey or not having an email address. Response rates also varied between demographic groups with, the possibility of unweighted estimates being highly unrepresentative, or biased.

To account for such potential bias, the weighting method was implemented to produce weighted estimates that are more representative of the total physician population. Moreover, weights should be used when making any estimates for all analysis using 2013 NPS data. The non-response adjustments were performed at the province by physician type by age-group by gender level, using the method of

calibration (reference: Survey Methods and Practices. Statistics Canada catalogue no.12-587-XPE, 2003.) The reference population for this calibration was the NPS Masterfile.

Eligible Population: The total population of eligible physicians (75,580) is an estimate because eligibility could not be determined for all 77,279 physicians on the initial NPS mailing list (especially that some physicians did not have an email address). Of the 77279 physicians on the initial list, eligibility could be determined for 10753 physicians, of whom 266 were ineligible and 10487 eligible. The weighting and non-response adjustment process included both the 10487 physicians who responded to the survey and the 266 found to be ineligible and assumes the same ineligibility rate (by demographic group) among the indeterminate cases (i.e., cases representing those who did not reply to the questionnaire or those who did not have an email address) as among those for which eligibility was determined. This allows the estimation of the number of ineligible physicians among the 66,748 physicians whose eligibility was not confirmed. This method produces an estimate of 65,093 eligible physicians. It is worth noting that the estimate for the total number of physicians (i.e., eligible and not eligible) (77501) is almost equal to the number of physicians in the original NPS mailing list (77279), giving us more confidence in the representativeness of the weighted estimates.

Estimated eligible population, 2013 NPS:

	Eligibility Determined	Eligibility Estimated	Total
Eligible	10487	**65093**	75580
Not Eligible	266	**1655**	**1921**
Total	10753	**66748**	**77501**

The definition of the eligible population in 2013 was different from that used in 2010, with the result that the overall population size estimates are larger in 2013. The difference in eligible population is not expected to have a significant impact on estimates of averages, proportions, regression coefficients and other analytic statistics; however estimates of totals for 2013 are not directly comparable to those from 2010.

Responding Sample: There were 10487 responses representing the (estimated) 75580 eligible physicians. After the non-response adjustments for different demographic groups, the estimation weights for these responses average 7.21, and range from 2.91 to 43.44.

Sampling Variability of Estimates

The data from the 2013 NPS are based on a census with considerable non-response. Different results would have been obtained if a census with no non-response had been conducted. These differences are called non-response errors, and sampling theory gives us a way to estimate how large they might be. For the NPS, it has been assumed that the non-response was approximately at random and so that it can be treated essentially uncorrelated with the questions asked.

The essential assumption is that the effect of non-response is approximately like that of a random sample within the classes that have been used for calibration. This is also the assumption under which the 2013 NPS estimates will accurately reflect the entire population of eligible physicians.

The weighting adjusts for over- or under-representation of groups defined by province, type of physician (specialist versus FP/GP), age, and sex. Hence any response bias due to differential non-response between these groups has been removed through the calibration of the weights.

Appendix E: Missing Data Binomial Regression Analysis Results

Table 5.1: Logistic Regression – Dissatisfaction with Professional Life (Missing)

Variable	Odds ratio	95% Confidence Interval
Gender (female)	Reference	
Gender (missing)	0.909	0.696-1.187
Gender (male)	1.009	0.950-1.072
Age (> 65 years old)	Reference	
Age (missing)	8.317	6.384-10.835
Age (<35 years old)	2.795	2.334-3.347
Age (35-44 years old)	2.617	2.255-3.038
Age (45-54 years old)	2.545	2.254-2.874
Age (55-64 years old)	2.093	1.864-2.350
Province (BC)	Reference	
Province (missing)	2.283	1.366-3.818
Province (Atlantic)	0.978	0.865-1.107
Province (QC)	0.747	0.672-0.829
Province (ON)	1.062	0.974-1.159
Province (MB/SK)	1.115	0.978-1.272
Province (AB)	1.092	0.979-1.217
Number of years licensed (>20)	Reference	
Years licensed (missing)	0.792	0.569-1.187
Years licensed (< 4)	0.679	0.596-0.772
Years licensed (5-9)	0.901	0.802-1.011
Years licensed (10-14)	1.080	0.963-1.210
Years licensed (15-19)	1.244	1.113-1.390
Practice type (specialist)	Reference	
Practice type (missing)	1.213	1.070-1.374
Practice type (family medicine only)	1.633	1.535-1.738
Academic involvement (none)	Reference	
Academic involvement (missing)	0.752	0.278-2.190
Academic involvement (teaches)	0.726	0.681-0.774
Practice population (rural/remote)	Reference	
Practice population (missing)	0.723	0.590-0.886
Practice population (inner city)	0.935	0.836-1.045
Practice population (urban)	0.778	0.714-0.847
Practice population (small town)	0.679	0.610-0.756
Remuneration model (blended)	Reference	
Remuneration model (missing)	0.979	0.863-1.111
Remuneration model (fee for service)	0.975	0.908-1.047
Remuneration model (other)	1.254	1.154-1.364
Provides on-call (no)	Reference	
Provides on-call (missing)	1.500	1.009-2.229
Provides on-call (yes)	0.981	0.920-1.045
EMR use (no)	Reference	
EMR use (missing)	0.729	0.474-1.120
EMR use (yes)	1.004	0.938-1.074

Variable	Odds ratio	95% Confidence Interval
Hours worked per week (> 120)	Reference	
Hours per week (missing)	3.075	1.796-5.263
Hours per week (<20)	1.342	0.851-2.116
Hours per week (20-40)	1.175	0.761-1.814
Hours per week (40-60)	1.063	0.690-1.638
Hours per week (60-80)	1.419	0.919-2.190
Hours per week (80-100)	1.631	1.047-2.541
Hours per week (100-120)	0.919	0.579-1.457
Income satisfaction (dissatisfied)	Reference	
Income satisfaction (missing)	1.008	0.652-1.559
Income satisfaction (satisfied)	0.255	0.240-0.271

Dependent variable coding: dissatisfaction = 1, satisfaction = 0

Table 5.2: Logistic Regression – Dissatisfaction with Work-Life Balance (Missing)

Variable	Odds ratio	95% Confidence Interval
Gender (female)	Reference	
Gender (missing)	0.932	0.728-1.192
Gender (male)	0.877	0.832-0.925
Age (> 65 years old)	Reference	
Age (missing)	2.124	1.642-2.747
Age (<35 years old)	1.156	0.994-1.343
Age (35-44 years old)	1.931	1.706-2.186
Age (45-54 years old)	1.851	1.682-2.036
Age (55-64 years old)	1.420	1.300-1.551
Province (BC)	Reference	
Province (missing)	0.439	0.251-0.770
Province (Atlantic)	0.836	0.749-0.933
Province (QC)	1.278	1.171-1.395
Province (ON)	0.995	0.921-1.076
Province (MB/SK)	1.123	0.997-1.265
Province (AB)	0.972	0.881-1.073
Number of years licensed (>20)	Reference	
Years licensed (missing)	0.934	0.623-1.400
Years licensed (< 4)	0.933	0.832-1.047
Years licensed (5-9)	0.983	0.886-1.091
Years licensed (10-14)	0.945	0.852-1.048
Years licensed (15-19)	0.862	0.780-0.953
Practice type (specialist)	Reference	
Practice type (missing)	1.707	1.532-1.900
Practice type (family medicine only)	1.292	1.224-1.365
Academic involvement (none)	Reference	
Academic involvement (missing)	2.737	1.237-6.055
Academic involvement (teaches)	1.011	0.955-1.070
Practice population (rural/remote)	Reference	
Practice population (missing)	1.030	0.870-1.220
Practice population (inner city)	0.838	0.761-0.923

Variable	Odds ratio	95% Confidence Interval
Practice population (urban)	0.848	0.788-0.913
Practice population (small town)	0.987	0.903-1.079
Remuneration model (blended)	Reference	
Remuneration model (missing)	0.721	0.643-0.808
Remuneration model (fee for service)	0.843	0.793-0.896
Remuneration model (other)	0.823	0.766-0.885
Provides on-call (no)	Reference	
Provides on-call (missing)	0.777	0.535-1.142
Provides on-call (yes)	1.630	1.542-1.724
EMR use (no)	Reference	
EMR use (missing)	0.860	0.582-1.269
EMR use (yes)	1.199	1.131-1.270
Hours worked per week (> 120)	Reference	
Hours per week (missing)	2.313	1.408-3.799
Hours per week (<20)	0.368	0.245-0.552
Hours per week (20-40)	0.520	0.356-0.761
Hours per week (40-60)	1.226	0.840-1.790
Hours per week (60-80)	1.818	0.976-1.671
Hours per week (80-100)	2.084	1.410-3.080
Hours per week (100-120)	1.929	1.286-2.893
Income satisfaction (dissatisfied)	Reference	
Income satisfaction (missing)	0.329	0.214-0.505
Income satisfaction (satisfied)	0.246	0.234-0.260

Dependent variable coding: dissatisfaction = 1, satisfaction = 0

Curriculum Vitae

JANA MALHOTRA

EDUCATION/TRAINING

Candidate for Masters of Clinical Science — July 2007 to present
University of Western Ontario, London ON

Fellowship, Academic Family Medicine — July 2007-2008
University of Western Ontario, London ON

Graduate, Family Medicine Rural/Regional Residency Program — June 2007
University of Western Ontario, London ON

Doctor of Medicine, University of Western Ontario, London ON — May 2005

Bachelor of Science, University of Waterloo, Waterloo ON — June 2001

ACADEMIC APPOINTMENTS

Assistant Professor — August 2008 to present
Department of Family Medicine, University of Ottawa, Ottawa ON

TEACHING AND ACADEMIC ACTIVITIES

Resident Remediation Supervisor, University of Ottawa, Ottawa ON — July 2015 to present

Post-Graduate Medical Education Accreditation Mini- Reviewer — March 2015 to present
University of Ottawa, Ottawa ON

Community Preceptor, Undergraduate Medical Program — September 2009 to present
University of Ottawa, Ottawa ON

Supervising Physician, Post-Graduate Family Medicine Program — September 2008 to present
University of Ottawa, Ottawa ON

HOSPITAL PRIVILEGES

The Ottawa Hospital, Ottawa ON — August 2008 to present
Department of Family Medicine with
Cross-Appointment to the Department of Rehabilitation Medicine

PRACTICE EXPERIENCE

Attending Physician, Hospice Care Ottawa — December 2013 to present
Central West Hospice, 1400 Carling Ave., Ottawa

Attending Physician, Short Term Rehabilitation Unit — October 2009 to present
The Ottawa Hospital – General Campus

Attending Physician, Family Medicine Teaching Inpatient Unit — May 2009 to present
The Ottawa Hospital – Civic Campus

Family Physician, West Ottawa Nepean Family Health Organization — May 2009 to present
309-1580 Merivale Rd., Ottawa ON

Emergency Medicine Physician, Strathroy Middlesex General Hospital — August 2007 to June 2008
395 Carrie Street, Strathroy ON N7G 3J4

CERTIFICATION/LICENSURE

Independent Practice Licence, College of Physicians and Surgeons of Ontario	June 2007
Certificant of the College of Family Physicians	June 2007
Advanced Trauma Life Support (ATLS)	May 2007
Licentiate of the Medical Council of Canada (LMCC)	December 2006
Neonatal Life Support (NALS)	February 2006
Advanced Pediatric Life Support (APLS)	November 2005
Advanced Cardiac Life Support (ACLS)	April 2005

RESEARCH AND PUBLICATIONS

Ramin B, **Malhotra J**, Schreiber Y, MacPherson P. *Infective endocarditis in a new immigrant*. Can Fam Physician. 2013 Jun; 59(6): 644-646.

Malhotra J, Belle Brown J. (2012). *Clearing the path*. In Belle Brown J, Thornton T, Stewart M (Eds.), Challenges and Solutions: Narratives of Patient-Centered Care (pp.39-42). London, UK: Radcliffe.

Malhotra J, Belle Brown J. (2012). *A Sad Refrain*. In Belle Brown J, Thornton T, Stewart M (Eds.), Challenges and Solutions: Narratives of Patient-Centered Care (pp.123-125). London, UK: Radcliffe.

Wiseman S, Osachoff H, Bassett E, **Malhotra J**, Bruno J, VanAggelen G, Mommsen TP, Vijayan MM. *Gene expression pattern in the liver during recovery from an acute stressor in rainbow trout*. Comp Biochem Physiol Part D Genomics Proteomics. Sept 2007. 2(3): 234-244.

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Sammons HM, **Malhotra J**, Choonara I, Sitar DS, Matsui D, Reider MJ. *British and Canadian views on the ethics of paediatric clinical trials*. Eur J Clin Pharmacol (2007) 63: 431-436.

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Bastedo C, Bellaire J, **Malhotra J**, Mrkobrada M, Touw A. *Canadian medical students voice their concerns*. CMAJ. 2002 Aug 6;167(3):235.

HONOURS AND AWARDS

Martin J. Bass Award	September 2010
CFPC Family Medicine Resident Award for Scholarship	June 2008
The Robert L. Taylor Southwestern Ontario Medical Residency Award	May 2005
National Science and Engineering Research Council Undergraduate Student Research Award	May 2001

PROFESSIONAL AFFILIATIONS

College of Family Physicians of Canada (CFPC)
College of Physicians and Surgeons of Ontario (CPSO)
Canadian Medical Protective Association (CMPA)
Canadian Medical Association (CMA)
Ontario Medical Association (OMA)