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Modeling factors explaining physicians' satisfaction with competence

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Abstract

Objective: Attention to physician wellness has increased as medical practice gains in complexity. Physician satisfaction with practice is critical for quality of care and practice growth. The purpose of this study was to model physicians' self-reported Satisfaction with Competence as a function of their perceptions of the Quality of Health Services, Distress, Coping, Practice Management, Personal Satisfaction and Professional Equity.

Methods: Comprehensive questionnaires were sent to a stratified sample of 5300 physicians across Canada. This cross-sectional study focused on physicians who examined and treated individual patients for a final study population of 2639 physicians. Response bias was negligible. The questionnaires contained measures of Satisfaction with Competence, Quality of Health Services, Distress, Coping, Personal Satisfaction, Practice Management and Professional Equity. Exploring relationships was done using Pearson correlations and one-way analysis of variance. Modeling was by hierarchical regressions.

Results: The measures were reliable: Satisfaction with Competence ($\alpha = .86$), Quality ($\alpha = .86$), Access ($\alpha = .82$), Distress ($\alpha = .82$), Coping ($\alpha = .76$), Personal Satisfaction ($\alpha = .78$), Practice Management ($\alpha = .89$) and the dimensions of Professional Equity (Fulfillment, $\alpha = .81$; Financial, $\alpha = .93$; and Recognition, $\alpha = .75$) with comparative validity. Satisfaction with Competence was positively correlated with Quality ($r = .32$), Efficiency ($r = .37$) and Access ($r = .32$); negatively correlated with Distress ($r = -.54$); and positively correlated with Coping strategies ($r = .43$), Personal Satisfaction ($r = .57$), Practice Management ($r = .17$), Fulfillment ($r = .53$), Financial ($r = .36$) and Recognition ($r = .54$). Physicians' perceptions on Quality, Efficiency, Access, Distress, Coping, Personal Satisfaction, Practice Management, Fulfillment, Pay and Recognition explained 60.2% of the variation in Satisfaction with Competence, controlling for years in practice, self-reported health and duties of physicians.

Conclusion: Satisfaction with Competence could be affected by excessive accumulation of duties, concerns about quality, efficiency, access, excessive distress, inadequate coping abilities, personal satisfaction with life as a physician, challenges in managing practices and persistent inequities among physicians.

Keywords

Physicians, distress, coping, satisfaction with competence, performance

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Introduction

The practice of medicine is a complex occupation, particularly when expensive treatments have to be provided under financial, human and facility constraints. In meeting the diverse needs of all their stakeholders, most importantly their patients, a physician practicing in Canada has to be a competent medical expert, communicator, collaborator, advocate, colleague, scholar, professional and manager.[1] These competencies were defined by the Royal College of Physicians and Surgeons of Canada (RCPSC). Achieving and maintaining these competencies creates accountabilities to patients, health care organizations, medical profession and physicians themselves as integral to their sense of professional satisfaction. Allocating time to become an effective

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manager, dedicated scholar, committed advocate or supportive colleague, however, competes with time needed for patient care and updating of clinical expertise.[2] As a result, many physicians experience dissatisfaction with performance of duties.[3] Yet all of these competencies are linked to the quality of care of patients.

Self-assessments of competence are regularly made by physicians to provide confidence in moving ahead with treatment plans, seek help from medical literature or refer to other physicians with special expertise.[4] While self-assessments may not correlate highly with formal assessments of overall competence, there is evidence that physicians accurately assess their competence to solve practice problems at the moment they make clinical decisions.[5] Therefore, physicians are responsible in self-assessment, and they know how many of their patients' needs are being met; this being integral to their Satisfaction with Competence (SwC).[6]

Medical practice in Canada and the United States has much in common since the accreditation of medical schools share the same founding principles.[7] In Canada, there were 78,657 physicians in active practice as of January 2014, with just over half (51.6%) in family practice.[8] In every province, family physicians are registered with their chapter of the Canadian College of Family Physicians (CCFP), and specialists are registered with their provincial chapter of the RCPSC; these two colleges having jurisdiction over professional regulation in the same way that the Federation of State Medical Boards has over physicians in the United States. Unlike the American Medical Association, virtually all practicing physicians in Canada belong to the Canadian Medical Association (CMA) because the provincial chapter is the bargaining agent representing physicians in negotiations with the provincial medical care insurance branch over fees for services charged to patients. In addition, medical malpractice insurance has been organized centrally for all physicians in active practice through a single national organization, the Canadian Medical Protective Association (CPMA), which was founded as a nonprofit organization at an annual meeting of the CMA in 1901. Extensive cooperation between the two organizations continues.

The vast majority of physicians in Canada practice in independent physician-led groups incorporated as firms that operate within the regulations of medical care insurance branches with each province.[9] Physicians self-select the practice group they belong to with the group establishing their practice philosophy and operating policies.[10] More than three-quarters of physicians still receive their income on the basis of fee-for-service paid out from the provincial medical plan where their practice is set up. The proportion of physicians choosing to receive fixed payments through alternative plans, also administered by the provinces, has been steadily rising.[11] About 8% (mostly radiologists, pathologists and laboratory specialists) practice in salaried positions in health facilities.[9] A few physicians practice outside their provincial medical care plan. These exclusively private specialty practice groups are in the larger metropolitan cities billing patients, or their private insurance plans, directly for nonessential medical services.[9]

Physicians who have considerable academic or administrative responsibilities in addition to clinical responsibilities for patients often choose alternative payment plans.[12] The profile of duties for most physicians is about 75% patient care; 15% academic duties, split between teaching and research; and 10% administrative duties, which includes medical practice management duties and serving on professional and health facility committees.

This study is the first to articulate a physician's satisfaction with their ability to maintain competencies; using 12 items of the Career Satisfaction measure of Lepnurm et al.[2] from their national study of physicians. This study also examines the contextual factors affecting SwC for physicians in Canada.

Factors affecting SwC

Contextual factors such as high workloads, unrelenting stress and persistent inequities negatively affect both perceptions of quality[13] and SwC.[14] Physicians are justifiably concerned with the capabilities of health personnel, quality of equipment, suitability of facilities and operational efficiencies associated with gaining access to resources for treating patients. Regulatory restrictions have been associated with increased workloads and distress for Canadian,[15] European[3] and American[16] physicians. Furthermore, excessive stress has been linked to reductions in quality of care provided to patients and increases in medical errors.[3,17] Physicians often underestimate the negative effects of chronic stress on their personal well-being and quality of care.[18] Professions such as medicine are intensely satisfying but often take a toll on personal life since patients require medical care around the clock; therefore, physicians schedule their work accordingly.[19] There needs to be separation of medical practice from personal life, and physicians in the United States have been shown to be at greater risk of burnout[20] than the general population.[19] Specific stressors such as fatigue from excessive workload, difficulties in accessing resources, emotional exhaustion from dealing with demanding patients and negative affect were documented for Canadian physicians.[15] In order to cope with high stress, physicians have used a variety of strategies including working through the stress (ignoring the stress), talking with co-workers, taking breaks, using humor, exercise, quiet time and pursuing outside interests.[21] As useful as coping strategies are in relieving stress, they do not address inequities in workloads and financial compensation.

Equity theory argues that individuals are motivated to maintain a balance between the value of their contributions and rewards received,[22] and many physicians have reported perceptions of negative imbalances between efforts and rewards, resulting in greater risk of suffering from depression.[23,24] Intrinsic rewards include gratification from helping

patients overcome illnesses; intellectual challenges in diagnosing and treating a variety of conditions presented by diverse patient populations; and for some physicians, teaching medical students and making advances in the field of medicine. Extrinsic rewards are financial compensation and the intangible rewards of appreciation expressed by patients and recognition by peers.[22]

Compensating for high levels of stress by overemphasis on financial incentives has been shown to be an ineffective policy, in that rewarding sustained and intensive efforts by financial means alone results in adverse effects on the health of physicians.[25] Within their group practices physicians have to manage their workloads and agree on the distribution of revenues and expenses. Effective management is a fundamental competency within the CanMEDS framework[1] encompassing strategic planning, budgeting, evaluating the efficiency of operations and holding regular administrative meetings.[26,27] The profile of clinical, academic and administration duties among physicians differs at early, middle and late career stages.[28,29] Practice management has been found to affect the career satisfaction of physicians; conversely, dissatisfaction with practice management issues has been shown to raise levels of distress.[30,31] American studies have shown administrative duties to take up to 1/6 of a physician's workday.[32] Distress associated with inequity may lead to physicians distancing themselves emotionally from their patients and colleagues.[33] Thus, perceptions of quality, distress, ability to cope, practice management and equity affect SwC.

Explaining SwC

Quality and SwC are multidimensional and contain both objective and subjective elements which are interdependent in day-to-day practice decisions made by physicians as they examine, test, diagnose and treat patients.[13] Furthermore, perceived practice quality is affected by work-life stress.[14] The purpose of this study was to model physicians' self-reported SwC as a function of their perceptions of the Quality of Health Services, Distress, Coping, Personal Satisfaction with Life as a Physician, Practice Management and Professional Equity, controlling for Years in Practice, Self-Reported Health, and organization of Duties of Physicians (Figure 1).

Methods

Participants and procedure

Comprehensive questionnaires on satisfaction with the achievement of competencies (Figure 2) and personal satisfaction along with physicians perceptions of Quality of Health Services, Distress, Coping, Practice Management and Professional Equity were sent to a large sample ($n=5300$) of physicians across Canada, which were stratified to obtain sufficient response from female specialists and physicians practicing in smaller communities. Ethics approval was obtained from the Behavioral Sciences Research Ethics Board of the University of Saskatchewan (BEH 197-2007) prior to having the sample drawn from the CMA Masterfile. Details on the sample population and stratification are found in Lepnurm et al.[2] The study was cross-sectional. Physicians were sent three full mailings and two reminders, followed by a one-page nonresponder survey using the classic Dillman[34] approach. Besides describing the purpose of the study, the cover letter stated that returning the questionnaire in the postage paid envelope constituted consent.

Of the total sample, 193 physicians had moved and 149 were ineligible (retired, practicing less than half-time, returned to medical school, on maternity leave or serious illness) yielding an eligible sample of 4958 physicians. Of the eligible participants, 2810 completed questionnaires for an effective response rate of 56.7%. Since this study focused on physicians who examined and treated individual patients, administrative ($n=30$), research ($n=38$) and population health ($n=103$) physicians were not included, for a final study population of 2639 physicians.

To check for response bias, a one-page survey containing key items from the original questionnaire was sent to all 2148 nonresponders. Subsequently, 686 nonresponse bias surveys were returned by mail or fax. Response bias was negligible on the basis of career satisfaction, authority to make clinical decisions, location, specialty, language, age or gender.[15]

Measures

SwC was based on three of the four original dimensions (inherent, professional and performance) of the Career Satisfaction scale of Lepnurm et al.[2] that covered the seven competencies defined by the RCPSC. All eight items of the performance and inherent interest dimensions were used, and three of the four items of the professional dimension were used. The professional and personal dimensions needed to exchange two items on the basis of content validity with acceptable cross-loadings (Appendix 1). The 12th SwC item "the way your practice is managed" is directly related to the manager competency of the RCPSC; therefore, this item was reassigned from the personal to the professional dimension. Similarly, the item "Satisfaction with earnings" has no bearing on competence but is a personal issue; therefore, this item was reassigned from the professional to the personal dimension. The 12 items of SwC were all scored on 6-point Likert scales from *very dissatisfied* to *very satisfied*. The other four items of Career Satisfaction, also scored on identical 6-point scales, assessed aspects of personal satisfaction.

Independent variables were captured by measures of Quality of the health system, Distress, Coping, Practice Management and Professional Equity. Quality of the health system was defined by three measures: Access, Quality and Efficiency. Quality and Access were measured using items defining specific health care services (community health,

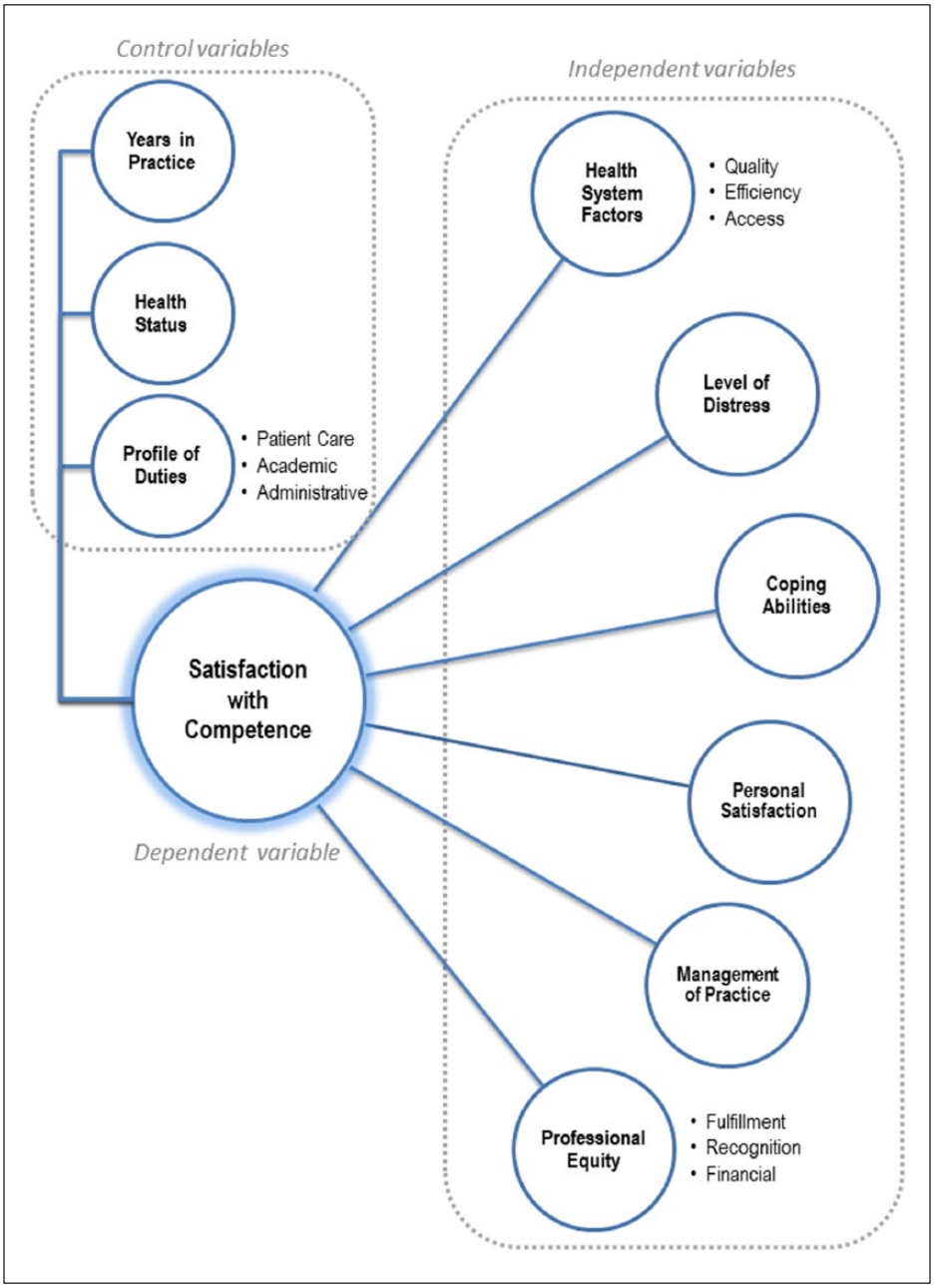
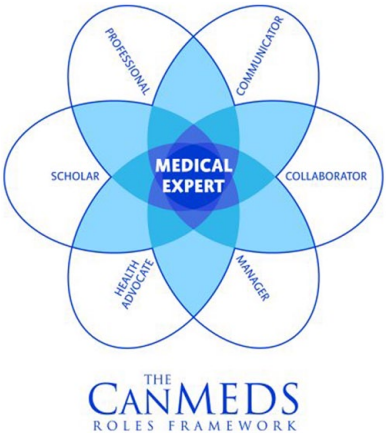


Figure 1. Theoretical framework of factors which contribute to Satisfaction with Competence.

hospital, rehabilitation, mental health and long-term care). Five scales were used to capture Quality, and five scales were used to measure Access, each ranging from 0 to 100 in 10-point increments.[35] Efficiency was measured using a single 6-point item ranging from *very poor* to *excellent.* Distress was captured using 13 items scored on 7-point scales ranging from *never* to *daily*.[15]

Coping, a companion to Distress, was measured using 15 items scored on the same 7-point scales (Appendix 2). The collegiality items pertaining to a physicians' willingness to take extra work and relieve another physician were adapted from Latack and Havlovic.[36] The item, "when you need to talk about a problem there are colleagues available who can give you sound advice" was adapted from the works of Hobfoll[37] and Greenglass.[38] The attitude items, "maintain an optimistic attitude throughout the day," "approach difficult tasks as opportunities to learn and develop skills" and "spend time keeping up skills or advancing clinical knowledge," were adapted from the works of Trenberth et al.[39] and Greenglass.[38] Two original items, "feel excited about the work that you do" and "feel really good because a patient had resolved a health issue," were influenced by the philosophy of caring for children with cancer by Stenmarker et al.[40] The managing work items are as follows: "How frequently



The CanMEDS1 framework articulates seven fundamental roles of physicians:

1. *Medical Expert;*
2. *Communicator;*
3. *Collaborator;*
4. *Manager;*
5. *Health Advocate;*
6. *Scholar; and*
7. *Professional*

Medical Expert *Definition: As Medical Experts, physicians integrate all of the CanMEDS roles applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centered care. Medical Expert is the central physician Role in the CanMEDS framework.*
Key Competencies:
Physicians are able to:
1. *Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical, and patient-centered medical care;*
2. *Establish and maintain clinical knowledge, skills and attitudes appropriate to their practice;*
3. *Perform a complete and appropriate assessment of a patient;*
4. *Use preventive and therapeutic interventions effectively;*
5. *Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic;*
6. *Seek appropriate consultation from other health professionals, recognizing the limits of their expertise.*

Communicator *Definition: As Communicators, physicians effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.*
Key Competencies:
Physicians are able to:
1. *Develop rapport, trust, and ethical therapeutic relationships with patients and families;*
2. *Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues and other professionals;*
3. *Accurately convey relevant information and explanations to patients and families, colleagues and other professionals;*
4. *Develop a common understanding on issues, problems and plans with patients and families, colleagues and other professionals to develop a shared plan of care;*
5. *Convey effective oral and written information about a medical encounter.*

Collaborator *Definition: As Collaborators, physicians effectively work within a healthcare team to achieve optional patient care.*
Key Competencies:
Physicians are able to:
1. *Participate effectively and appropriately in an interprofessional healthcare team;*
2. *Effectively work with other health professionals to prevent, negotiate, and resolve interprofessional conflict.*

Manager *Definition: As Managers, physicians are integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system.*
Key Competencies:
Physicians are able to:
1. *Participate in activities that contribute to the effectiveness of their healthcare organizations and systems;*
2. *Manage their practice and career effectively;*
3. *Allocate finite healthcare resources appropriately;*
4. *Serve in administration and leadership roles, as appropriate.*

Health Advocate *Definition: As Health Advocates, physicians responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.*
Key Competencies:
Physicians are able to:

(Continued)

Figure 2. (Continued)

1. *Respond to individual patient health needs and issues as part of patient care;*
2. *Respond to the health needs of the communities that they serve;*
3. *Identify the determinants of health of the populations that they serve;*
4. *Promote the health of individual patients, communities and populations.*

Scholar *Definition: As Scholars, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.*
Key Competencies:
Physicians are able to:
1. *Maintain and enhance professional activities through ongoing learning;*
2. *Critically evaluate information and its sources, and apply this appropriately to practice decisions;*
3. *Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others as appropriate;*
4. *Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices.*

Professional *Definition: As Professionals, physicians are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.*
Key Competencies:
Physicians are able to:
1. *Demonstrate a commitment to their patients, profession, and society through ethical practice;*
2. *Demonstrate a commitment to their, patients, profession, and society through participation in profession-led regulation;*
3. *Demonstrate a commitment to physician health and sustainable practice.*

1. Source: Frank JR, Snell L, Sherbino J, editors. *The Draft CanMEDS 2015 Physician Competency Framework – Series IV*. Ottawa: The Royal College of Physicians and Surgeons of Canada; 2015 March. All rights reserved. This material may be reproduced for educational, personal, non-commercial purposes only, with attribution to the source as noted
Accessed Aug 31, 2015 http://www.royalcollege.ca/portal/page/portal/rc/canmeds/framework

Figure 2. CanMEDS framework articulates seven fundamental roles of physicians.[1]

do you review and plan tasks" was adapted from Lemaire and Wallace[21] and "Set aside time for activities of professional interest" was adapted from Weiner et al.,[41] while "discuss issues and problems with staff" was adapted from Havlocic and Keenan.[42] The self-care items "eat a nutritious lunch," "engage in physical activity," "pause for relaxing breaks" and "get a restful night's sleep" were adapted from the works of Lemaire and Wallace[21] and Weiner et al.[41]

Practice Management was measured using seven items: strategic planning, setting budgets, assessing the performance of staff, evaluating the efficiency of operations and quality of services and holding meetings to discuss administrative and clinical issues (Appendix 3), each scored on 3-point scales (none, informal and formal).[26,43] Personal Satisfaction with Life as a Physician was measured with four items: "your ability to: control your work schedule; to keep work responsibilities from interfering with your personal life; to maintain satisfying activities in the community" and "Satisfaction with your earnings as a physician[2]"; all scored using 6-point scales from *very dissatisfied* to *very satisfied* (Appendix 1). Professional Equity consisted of the constructs: Fulfillment, Financial and Recognition, measured using 6-point scales, from *very low* to *very high*.[22]

Categorical variables were used to describe organization of practices and financial mechanisms (Table 4). Organization of practice was measured using three dichotomous variables: (1) university or community setting, (2) hospital or community setting and (3) solo or group practice. Financial mechanisms were measured as two sets of multiple response categories: (1) method of payment with seven categories (95%, 75% and 60% plus fixed payment, blended volume and fixed payment; 60%, 75% and 95% fixed payment plus volume payment) and (2) handling revenues and expenses with four categories (individual revenues and individual expenses, individual revenues and shared expenses, shared revenues and shared expenses and salary or contract).

The control variables were Years in Practice, Self-Reported Health and Duties of Physicians. To eliminate variation in activities prior to embarking on a medical career, Years in Practice was preferred over age. Self-Reported Health used a 5-point rating scale ranging from *very poor* to *very good*. Duties of Physicians was measured in percentages of patient care and academic and administrative responsibilities, as in CMA surveys of physicians.

Statistical analyses

Analyses were conducted in three stages: (1) establishing of measures, (2) exploring relationships among variables and (3) modeling variations in SwC. Establishing the measures began with verifying the reliability of the measures using Cronbach's alpha to test the internal consistency of the items

in each scale; then, the dimensional structure of the measures was confirmed using the Unitarian[44] and concurrent comparison[45] approaches. Overall and separate factor analyses with varimax rotation and eigenvalues were conducted by gender, official language of correspondence and between general practitioners (GPs) and family practitioners (FPs) and all specialists together, to determine the stability of factor structures.[46]

Exploring relationships among the psychometric measures was done using Pearson correlations and among the categorical variables using one-way analysis of variance (ANOVA).[47]

After establishing the measures and categories of physicians, a hierarchical model was set up with SwC as the dependent variable and the independent variables to be entered in eight steps, beginning with the control variables such as (1) Years in Practice and Self-Reported Health and (2) Duties of Physicians and then the independent variables of (3) Quality, Access and Efficiency; (4) Distress; (5) Coping; (6) Practice Management; (7) Satisfaction with Life as a Physician; and (8) Professional Equity (Fulfillment, Financial and Recognition). The distributions of the dependent and independent variables were examined by means, standard deviations (SDs), skewness and kurtosis statistics. All were normally distributed with acceptable skewness and kurtosis, except Academic and Administrative Duties, measured in percentages, were positively skewed (1.57 and 2.82) with excessive kurtosis (3.61 and 12.48), respectively, requiring transformation by natural log which yielded acceptable skew and kurtosis values (−0.546 and 1.263) and (−0.426 and −0.001), respectively. Then, an initial regression analysis of all 2639 physician cases was done to identify 32 outlier cases using Cook's distance, centered leverage values, scatterplots and boxplots that were eliminated from subsequent regression models. Tolerance values were used to check for redundancy or multicollinearity among the independent variables. For the modeling, β values and coefficients of determination R^2 were interpreted to determine the importance, direction and magnitude of the independent factors.[47]

The stability of the regression model for all physicians (Table 5) was verified by nine individual regression analyses by gender; language of correspondence (English and French); medical and surgical specialists together compared to GPs; and stage of career (initial years: 1–5 years, middle years: 6–34 years and late years: ⩾35 years).

Results

Reliability and validity of measures

The 12-item SwC measure was found to have no excessive inter-item correlations and to be reliable ($\alpha = .86$). Reliabilities for male and female physicians were $\alpha = .84$ and $\alpha = .87$, respectively (Table 1). Reliabilities for GPs and specialists were $\alpha = .87$ and $\alpha = .84$, respectively, while reliabilities obtained for physicians responding in English and French were $\alpha = .87$ and $\alpha = .85$, respectively, thus demonstrating internal consistency and comparative validity. The factor structure of SwC for all physicians explained 60.2% of the variance.[2] The dimensions of performance, professional and inherent, satisfaction in medicine accounted for 39.3%, 11.2% and 9.7% of the variance of SwC, respectively. For validation, the factor structure of SwC was analyzed separately for GPs and specialists by gender and language. For each analysis, the dimension of performance satisfaction explained the majority of the variance followed by professional and then inherent satisfaction for totals ranging from 52.6% to 63.3%, with only minor loading differences between specializations, gender and language.

The reliabilities of Quality and Access measures were also found to be reliable at $\alpha = .87$ and $\alpha = .82$, respectively (Table 1). Quality and Access measures demonstrated internal consistency and comparative validity for male and female physicians, GPs, specialists and physicians responding in English and French with reliabilities ranging from $\alpha = .81$ to $\alpha = .88$. The Distress measure used was also found to be reliable ($\alpha = .82$). Reliabilities obtained for male and female physicians, GPs, specialists and physicians responding in English and French ranged from $\alpha = .81$ to $\alpha = .83$, thus indicating internal consistency and comparative validity (Table 1). The factor structure of the Distress measure for all physicians explained 51.3% of the variance, conforming to the three dimensions of Distress[15] with Fatigue, Reaction and Negative Affect, explaining 32.6%, 10.6% and 8.3% of the variance, respectively. The separate analyses of Distress by gender, language and between GPs and specialists indicated a stable factor structure explaining from 50.6% to 60.1% of the variance with only minor differences in factor loadings.

The 15-item Coping scale developed as a companion to the Distress scale was found to be reliable ($\alpha = .76$). Reliabilities obtained for the Coping measure among male and female physicians, GPs, specialists and physicians responding in English and French ranged from $\alpha = .72$ to $\alpha = .77$, thus demonstrating internal consistency and comparative validity (Table 1). The factor structure for all physicians obtained from the Coping measure explained 54.5% of the variance overall and in the separate analyses by gender, language and between GPs and specialists explaining from 51.6% to 60.7% of the variance.

The seven-item Practice Management scale was also found to be reliable ($\alpha = .86$). Reliabilities obtained for the Management scale for male and female physicians, GPs, specialists and for physicians responding in English and French ranged from $\alpha = .86$ to $\alpha = .89$ (Table 1). Factor analysis of Practice Management items according to eigenvalues yielded one factor which explained 58.7% of the variance. Separate factor analyses by gender, language and between GPs and specialists all yielded only one factor explaining from 56.6% to 60.4% of the variance in Practice Management. Reliabilities for the four item Personal Satisfaction scale ranged from $\alpha = .77$ to $\alpha = .82$ (Table 1) by gender, language and between GPs and specialists.

Table 1. Reliability and distribution of independent and control variables.

Variables	Number of items	Cronbach's alpha		Range of scale	Females (n = 1347): M (SD)	Males (n = 1462): M (SD)
		Females	Males			
Dependent variable						
Satisfaction with Competence	12	.841	.874	1–6	4.27 (0.63)	4.29 (0.66)
Independent variables						
Quality of the health system	5	.867	.859	0–100	59.1 (18.4)	59.6 (18.7)
Access to the health system	5	.822	.823	0–100	45.5 (17.1)	47.6 (18.2)
Efficiency of the health system	1	–	–	1–6	3.07 (0.96)	3.20 (1.03)
Distress scale	13	.818	.828	1–7	3.70 (0.91)	3.56 (0.96)
Coping scale	15	.735	.772	1–7	4.46 (0.72)	4.51 (0.79)
Personal Satisfaction	4	.781	.794	1–6	3.83 (1.02)	3.90 (1.20)
Practice Management	7	.886	.886	1–14	7.19 (4.37)	7.02 (4.23)
Professional Equity—Fulfillment	6	.802	.819	1–6	4.73 (0.77)	4.80 (0.81)
Professional Equity—Financial	6	.934	.927	1–6	3.43 (1.21)	3.47 (1.17)
Professional Equity—Recognition	5	.745	.749	1–6	3.95 (0.84)	3.97 (0.84)
Control variables						
Years in Practice	–	–	–	–	16.42 (10.31)	22.02 (10.55)
Self-Reported Health	1	–	–	1–5	3.97 (0.81)	3.93 (0.82)
% Patient Care Duties[a]	1	–	–	1–100	75.03 (17.34)	75.28 (17.94)
% Academic Duties[a]	1	–	–	1–100	15.74 (11.95)	14.64 (11.89)
% Administrative Duties[a]	1	–	–	1–100	9.23 (11.47)	10.07 (13.09)

SD: standard deviation.

[a]Each year the Canadian Medical Association surveys its members, and duties as above are familiar to all physicians in Canada. Academic duties encompass teaching, research and participation in Continuing Medical Education; therefore all physicians have some academic duties. Similarly, all physicians have some administrative duties in the way their own practice is managed, and many serve on committees in hospitals.

Reliabilities obtained for the dimensions of Professional Equity[22]: Fulfillment (α=.81), Financial (α=.93) and Recognition (α=.75) were high (Table 1) and consistent with previous studies.[30,35] The reliabilities obtained for Fulfillment, Financial and Recognition for male and female physicians, GPs and specialists and for physicians responding in English and French ranged from α=.78 to α=.82, α=.92 to α=.93 and α=.74 to α=.76, respectively. The factor structure obtained for the Professional Equity measure explained 60.3% of the variance for all physicians with the dimensions of Fulfillment, Financial and Recognition explaining 33.2%, 18.9% and 8.2% of the variance, respectively.[22] The factor structure for Professional Equity was found to be stable according to gender, language and between GPs and specialists explaining from 58.2% to 60.8% of the variance.

Descriptive findings

The average age of responding physicians was M=50.5 years (SD=9.8 years) for males and M=44.9 years (SD=8.5 years) for females (Table 2). There were sufficient numbers of respondents in each specialization by gender, the smallest group being male clinical specialists (n=27). Female emergency specialists were the youngest group (females: M=40.0, SD=6.7, and males: M=42.8, SD=8.3) and female psychiatrists (M=47.3, SD=9.3) and male radiologists (M=53.9, SD=8.5) being the oldest respondents. Respondent female physicians were in practice for M=16.1 years (SD=9.2 years) and responding male physicians were in practice for M=22.1 years (SD=10.7 years; Table 2). Subtracting age from years in practice indicates that female physicians were on average 28.8 years of age when they began practicing medicine and male physicians were 28.3 years of age when they began practicing medicine, with physicians in general practice being the youngest and surgeons and other specialists being 2 or 3 years older (Table 2) because the length of training is longer for these specializations.

Self-Reported Health was reported on average as good by physicians with females reporting (M=3.97 on a 5-point scale, SD=0.81) and males reporting (M=3.93, SD=0.82). Physicians reported patient care duties as three-quarters of their workload, academic duties as 14%–16% and administrative duties to be about 10% of their workload, with very little differences between male and female physicians (Table 1).

Physicians were satisfied with their achievement of competencies with no significant difference between male (M=4.29 of 6.0, SD=0.66) and female physicians (M=4.27 of 6, SD=0.63; Table 1). Physicians rated Quality of the health system to be just under 60% on the grading scale, with female ratings (M=59.1, SD=18.4) and male ratings (M=59.6, SD=18.7) showing considerable variation. Physicians rated Access to be poor (45%–48%), with female physician ratings (M=45.5, SD=17.1) and male physician

Table 2. Average age and years in practice of physician study sample.

Major area of specialization	Average age (years)					
	Females			Males		
	N	*M*	*SD*	*n*	*M*	*SD*
General practice	524	44.1	8.3	478	50.4	9.2
General plus specialty[a]	60	44.5	7.8	52	47.4	8.3
Clinical specialists[b]	32	45.5	10.5	27	51.3	9.8
Chronic care specialists[c]	68	45.4	8.9	44	50.3	11.3
Pediatrics	105	46.1	7.8	55	51.9	9.7
Obstetricians or gynecologists	42	42.8	8.7	29	52.7	9.5
Internal specialists[d]	59	45.3	8.3	117	49.9	10.4
Psychiatrists	121	47.3	9.3	110	53.2	11.3
Anesthetists	57	46.5	9.4	95	48.2	9.4
Radiology or imaging	42	46.1	8.6	57	53.9	8.5
Laboratory specialists[e]	61	46.9	7.9	37	49.0	9.2
Procedural specialists[f]	32	46.3	8.3	87	53.2	10.3
Emergency medicine	38	40.0	6.7	59	42.8	8.3
Surgeons	34	42.6	6.0	113	51.3	9.4
Total	1275	44.9	8.5	1360	50.5	9.8
	Average years in practice					
	Females			Males		
	N	*M*	*SD*	*n*	*M*	*SD*
General practice	524	16.3	8.4	478	22.9	9.5
General plus specialty[a]	60	17.1	8.4	52	20.1	9.1
Clinical specialists[b]	32	15.2	9.6	27	22.0	11.8
Chronic care specialists[c]	68	16.8	10.8	44	21.6	13.4
Pediatrics	105	16.3	9.3	55	23.6	11.0
Obstetricians or gynecologists	42	12.1	9.5	29	24.3	10.2
Internal specialists[d]	59	14.4	8.3	117	20.1	11.1
Psychiatrists	121	17.0	10.8	110	24.7	12.7
Anesthetists	57	18.0	10.4	95	19.9	10.3
Radiology or imaging	42	17.6	9.9	57	26.4	8.9
Laboratory specialists[e]	61	18.0	9.4	37	19.4	11.2
Procedural specialists[f]	32	16.6	9.5	87	24.5	11.4
Emergency medicine	38	11.5	7.4	59	14.4	8.8
Surgeons	34	11.6	6.7	113	21.1	10.9
Total	1275	16.1	9.2	1360	22.1	10.7

GP: general practitioner; *SD*: standard deviation.
[a]GP specialists divide their time between general practice and areas of specialization.
[b]Includes allergists, dermatologists, endocrinologists and geneticists.
[c]Includes geriatricians, oncologists, pain management, palliative care, physiatrists and rheumatologists.
[d]Includes cardiologists, gastroenterologists, general internists, hepatologists, nephrologists and respirologists.
[e]Includes hematologists, laboratory medicine, microbiologists and pathologists.
[f]Includes interventional cardiologists, neonatologists, ophthalmologists, otolaryngologists and urologists.

ratings ($M=47.6$, $SD=18.2$) again showing considerable variation (Table 1). Efficiency ratings were barely adequate, with female physicians ($M=3.07$, $SD=0.96$) and male physicians ($M=3.20$, $SD=1.03$, Table 1) reporting ratings on a 6-point scale.

The mean Distress level experienced by female physicians was $M=3.70$ of 7 ($SD=0.91$) and $M=3.56$ ($SD=0.96$) for male physicians, both translated to between once a month and 2 or 3 times a month on the rating scale from *never* to *every day*. The mean Coping levels experienced were somewhat higher; average Coping ability reported for female physicians was $M=4.46$ of 7 ($SD=0.72$) and $M=4.51$ ($SD=0.79$) for male physicians, translating to using coping abilities between 2 or 3 times a month and once a week (Table 1). The

Table 3. Pearson correlations between Satisfaction with Competence and associated factors.

$n=2661$[a]	Quality	Efficiency	Access	Distress	Coping	Personal Satisfaction	Practice Management	Fulfillment	Pay	Recognition
Satisfaction with Competence Pearson correlations	.321**	.365**	.317**	−.538**	.426**	.572**	.168**	.526**	.362**	.537**
$n=2661$[a]	Years in Practice	Self-Reported Health	Distress	Coping	Personal Satisfaction	Practice Management	% Patient Care	AcadLn[b]	AdmLn[b]	
Satisfaction with Competence	.096*	.288**	−.538**	.426**	.572**	.168**	.036	.103**	−.022	
Years in Practice		−.048+	−.170**	.053+	.144**	−.093*	.082*	−.097*	−.025	
Self-Reported Health			−.270**	.288**	.299**	.089*	.024	.039	−.020	
Distress				−.272**	−.597**	−.032	−.051+	−.058+	.094*	
Coping					.372**	.250**	−.117*	.168**	.054+	
Personal Satisfaction						.033	.114**	−.022	−.091*	
Practice Management							−.223**	.236**	.145**	
% Patient Care								−.582**	−.544**	
AcadLn[b]									.130**	

+p-value < .05; *p-value < .01; **p-value < .001.
[a]A total of 32 outlier cases were removed for the regression analyses from the 2693 respondents.
[b]Academic percentage and Administrative percentage were positively skewed and therefore transformed by natural log (Ln).

average Practice Management score for female physicians was $M=7.19$ of 14 ($SD=4.37$) and $M=7.02$ ($SD=4.23$) for male physicians. The average Personal Satisfaction with practicing medicine was $M=3.83$ ($SD=1.02$) for female physicians and $M=3.90$ ($SD=1.20$) for male physicians on a 6-point scale (Table 1).

For Professional Equity, Fulfillment was rated to be high by both male and female physicians, while ratings of Recognition and Financial were reported to be moderately high by both male and female physicians (Table 1). The average Fulfillment equity was rated to be $M=4.73$ on a 6-point scale ($SD=0.77$) by female physicians and $M=4.80$ ($SD=0.81$) for male physicians. The average Recognition equity was rated to be $M=3.95$ on a 6-point scale ($SD=0.84$) by female physicians and $M=3.97$ ($SD=0.84$) among males. The average Pay equity was rated to be $M=3.43$ on a 6-point scale ($SD=1.21$) by female physicians and $M=3.47$ ($SD=1.17$) for males.

Correlations with SwC

The independent variables were all significantly correlated with SwC: Quality ($r=.32$, $p<.001$), Efficiency ($r=.37$, $p<.001$), Access ($r=.32$, $p<.001$), Distress ($r=-.54$, $p<.001$), Coping ($r=.43$, $p<.001$), Personal Satisfaction with Life as a Physician ($r=.57$, $p<.001$), Practice Management ($r=.17$, $p<.001$), Fulfillment ($r=.53$, $p<.001$), Pay ($r=.37$, $p<.001$) and Recognition ($r=.54$, $p<.001$). The control variables, Self-Reported Health ($r=.29$, $p<.001$), Years in Practice ($r=.10$, $p=.004$) and Academic Duties ($r=.10$, $p=.011$), were also significantly correlated with SwC (Table 3). Administrative Duties were not significantly correlated with SwC (Table 3).

Quality, Efficiency and Access were found to be highly positively intercorrelated. As expected, Self-Reported Health was negatively correlated with Distress ($r=.27$, $p<.001$) and positively correlated with Coping ($r=.28$, $p<.001$), while Distress was negatively correlated with Coping ($r=-.27$, $p<.001$; Table 3). Practice Management score was moderately correlated with Coping Strategies ($r=.25$, $p<.001$), Academic Duties ($r=.24$, $p<.001$) and weakly correlated with Administrative Duties ($r=.15$, $p<.001$) but negatively correlated with Patient Care Duties ($r=-.22$, $p<.001$; Table 3).

The variety of practice arrangements was described in three categories with significant differences in Practice Management scores for physicians in university groups ($M=9.7$, $SD=3.6$ of 14) compared to ($M=6.6$, $SD=4.32$) physicians without university affiliation (Table 4), hospital-based groups ($M=8.9$, $SD=3.9$) compared to nonhospital-based physicians ($M=6.2$, $SD=4.2$) and group ($M=7.9$, $SD=4.2$) compared to solo ($M=4.6$, $SD=3.6$) practice (Table 4) using F-tests. The variety of financial methods was described according to payment methods and financial sharing mechanisms. Physicians accepting payment predominantly by fixed payments had higher practice management scores ($M=9.3$–9.5, $SD=3.7$–4.2) compared to physicians favoring payment by volume of service ($M=6.1$–7.2, $SD=4.0$–4.2) using Scheffe's tests of multiple comparisons (Table 4). Similarly, physicians sharing revenues and expenses had higher practice management scores ($M=8.8$,

Table 4. Management functions score.

		n	*M*	*SD*	Significance[a]	
By practice arrangement	University group or not					
	No	2230	6.6	4.2	*p*-value < .001	
	Yes	408	9.7	3.6		
	Hospital based or not					
	No	1762	6.2	4.2	*p*-value < .001	
	Yes	877	8.9	3.9		
	Solo or group practice					
	Group	2005	7.9	4.2	*p*-value < .001	
	Solo	634	4.6	3.6		
	Total	2639	7.1	4.3		
	Pay types	*n*	*M*	*SD*	Group	Significance[b]
By payment type	95% Volume	1300	6.1	4.2	Tendency for volume	*p*-value < .001
	75% Volume	465	6.7	4.0		
	60% Volume	219	7.2	4.1		
	APP[c]	126	8.9	3.9	Tendency for fixed	
	60% Fixed	86	9.3	3.7		
	75% Fixed	126	9.3	4.2		
	95% Fixed	317	9.5	3.7		
	Total	2639	7.1	4.3		
	Revenue sharing	*n*	*M*	*SD*	Group	Significance[b]
By handling of revenues and expenses	Individual revenues and individual expenses	929	5.5	4.1	Individual	*p*-value < .001
	Individual revenues and shared expenses	688	6.7	3.9		
	Shared revenues and shared expenses	390	8.8	4.0	Shared	
	Salary or contract	632	8.8	4.1		
	Total	2639	7.1	4.3		

SD: standard deviation.
[a]*F*-test of differences between groups and within groups.
[b]Scheffe's test of multiple comparisons.
[c]Alternative payment plans consists of about half fee-for-service and half fixed payment schemes.

SD = 4.0–4.1) compared to physicians handling revenues or expenses on an individual basis (*M* = 5.5–6.7, *SD* = 3.9–4.1) using Scheffe's tests of multiple comparisons (Table 4).

Modeling SwC

In the first step of the model, Years in Practice and Self-Reported Health explained 9.5% of the variance in SwC (Table 5). In the second step, the tripartite set of Physicians' Duties was entered explaining an incremental 1.5% of the variance. All three types of duties were significant, with Patient Care as the dominant responsibility ($\beta = .091$, $p < .001$), bringing the cumulative R^2 to 11.7% after entry of all the control variables (Table 5). In the third step, the Health System variables were entered, resulting in a change in R^2 of 13.3% with all three, Quality ($\beta = .042$, $p < .008$) Efficiency ($\beta = .113$, $p < .001$) and Access ($\beta = .064$, $p < .001$), contributing significantly, bringing the cumulative R^2 to 25.1% (Table 5). Efficiency was the dominant Health System variable followed by Access and then Quality. Distress was entered alone in step 4 and ($\beta = -.155$, $p < .001$) accounting for a significant incremental change of 15.0%, increasing the total variance explained to 40.1%, and Coping was entered alone in step 5 adding a significant incremental change of 5.4% ($\beta = .051$, $p = .002$), increasing the total variance to 45.5% (Table 5). Personal Satisfaction was entered in step 6, adding a significant incremental change of 4.6% to the variance, increasing the total variance to 50.1% ($\beta = .248$, $p < .001$; Table 5). Practice Management was entered in step 7, adding a small but significant ($\beta = .077$, $p < .001$) incremental variance of 0.7%. Finally, the three measures of Professional Equity (Fulfillment: $\beta = .193$, $p < .001$; Pay: $\beta = .043$, $p = .002$; and Recognition: $\beta = .223$, $p < .001$) were entered in step 8, collectively adding a significant incremental 9.4% to the variance explained for a total R^2 of 60.2% ($F = 223.7$, $p < .001$; Table 5). Personal Satisfaction was the most important individual predictor followed by Recognition, Fulfillment and Distress.

Six of the nine individual models had the same predictors in the same order explaining between 57.1% and 63.1% of the variance in SwC as the model for all physicians that explained 60.2% of the variance in SwC (Table 6). For GPs,

Table 5. Predictors of Satisfaction with Competence for all physicians.

	DV = Satisfaction with Competence	Cumulative R^2	ΔR^2	β	Significance	Total
	Independent variables entered					
1	Years in Practice			.012	.354	.915
	Self-Reported Health	.095	.095***	.023	.096	.841
2	Duties					
	% Patient Care			.091	.000	.427
	% Academic (Ln)[a]			.078	.000	.576
	% Administrative (Ln)[a]	.117	.015***	.047	.003	.642
3	Health System					
	Quality			.042	.008	.622
	Efficiency			.113	.000	.510
	Access	.251	.134***	.064	.000	.608
4	Distress Scale	.401	.150***	−.176	.000	.580
5	Coping Scale	.455	.054***	.051	.002	.672
6	Personal Satisfaction	.501	.046***	.248	.000	.554
7	Practice Management	.508	.007***	.077	.000	.873
8	Professional Equity					
	Fulfillment			.193	.000	.658
	Pay			.043	.002	.787
	Recognition	.602[b]	.094***	.223	.000	.693

DV: dependent variable.
df = 2589 with 32 outliers removed.
[a]Academic percentage and Administrative percentage were positively skewed and therefore transformed by natural log (Ln).
[b]F change 223.7, significance: .000.
*$p < .05$; **$p < .01$; ***$p < .001$.

there was one change in the model with Recognition ranked highest, then Personal Satisfaction followed by Fulfillment and Distress explaining 61.5% of the variance in SwC. Of these seven models, some of the predictors ranking fifth or lower were no longer significant; however, when the insignificant predictors were removed, the top four predictors remained significant, in the same rank order, and the percentage of variance explained declined by less than 1%. These models are stable.

Physicians corresponding in French ranked Personal Satisfaction highest, following all physicians, but thereafter differed, ranking Fulfillment second, Distress third and Recognition fourth collectively explaining 59.9% of the variance in SwC (Table 6). However, when the three, no longer significant predictors, were removed, Access displaced Distress to fourth rank and Recognition to fifth, collectively explaining 58.7% of the variance in SwC. Similarly, physicians early in their careers ranked Fulfillment first, Distress second, Access third, Recognition fourth and Personal Satisfaction fifth collectively explaining 61.1% of the variance in SwC (Table 6). When two insignificant predictors were removed, Access displaced Distress to third, but Fulfillment remained at the highest rank, and the variance of SwC declined only slightly to 60.9%. While the latter two models are not completely stable, there is general agreement with the overall model. Direct comparison of β coefficients across models should not be done due to differences in effect sizes among models with varying numbers of subjects.[48]

Discussion

The cascade of overwork, inadequate staffing, outdated equipment, high stress, medical errors, dissatisfaction with performance and depression has been reported in many countries.[49–51] This study has explained how SwC may be negatively affected from 2639 physicians' self-reports of excessive accumulation of duties, concerns about quality, excessive distress, inadequate coping abilities, difficulties in managing practices and persistent inequities among physicians across Canada (Figure 1). The balance between personal life and work responsibilities evolves during a physician's career and entails collaboration with colleagues within their group practice and for many physicians involves responsibilities at health care facilities, some being academic health centers.[19] Separation between work and personal life is often difficult to achieve because patients require care around the clock, even though colleagues look after each other's patients.

Our findings suggest that it is not advantageous to pile academic responsibilities on top of clinical work at formative stages of medical careers due to negative effects on stress.[28] For established physicians achieving a balance

Table 6. Model summaries.

	All physicians ($n=2607$)			Females ($n=1259$)		Males ($n=1345$)		English ($n=2262$)		French ($n=343$)	
	Factor	Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β
All physicians compared to physicians by gender and language of correspondence	Years in Practice		.012		.001		.025		.013		.064
	Rate Health	.095	.023	.085	.025	.104	.020	.098	.028*	.123	.019
	% Patient Care		.091**		.095**		.091**		.084**		.071
	% Academic		.078***		.072*		.082**		.082***		.037
	% Administrative	.117	.047**	.106	.053*	.126	.049*	.122	.054**	.133	.011
	Quality		.042**		.060*		.030		.044*		.065
	Efficiency		.113***		.109***		.121***		.109***		.072
	Access	.251	.064**	.218	.036	.281	.089***	.252	.063***	.284	.112*
	Distress	.401	−.176***4th	.372	−.185***4th	.427	−.162***4th	.399	−.166***4th	.396	−.131**4th
	Coping	.455	.051*	.434	.063*	.476	.048*	.464	.066**	.414	.031
	Personal Satisfaction	.501	.248***1st	.471	.229***1st	.530	.264***1st	.505	.238***1st	.526	.371***1st
	Practice Management	.508	.077***	.487	.110***	.535	.051*	.509	.063***	.537	.114**
	Fulfillment equity		.193***3rd		.190***3rd		.199***3rd		.204***3rd		.185***2nd
	Pay equity		.043**		.049*		.039*		.017		.089*
	Recognition equity	.602	.223***2nd	.571	.213***2nd	.631	.238***2nd	.604	.236***2nd	.599	.116**3rd
		$df=2589$		$df=1243$		$df=1329$		$df=2246$		$df=327$	
	Factor	Early years ($n=198$)		Middle years ($n=2207$)		Late years ($n=202$)		GPs[a] ($n=988$)		Specialists[b] ($n=1160$)	
		Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β	Cumulative R^2	β
By career stage and specialty category	Years in Practice		.018		.004		.077		.036*		.008
	Rate Health	.129	.064	.093	.020	.112	.044	.097	.028	.082	.010
	% Patient Care		.085		.084***		.120*		.037		.138**
	% Academic		.114		.073**		.064		.048		.112*
	% Administrative	.148	−.032	.118	.055**	.144	.023	.119	.023	.101	.098**
	Quality		.069		.048**		.013		.026		.052*
	Efficiency		.073*		.116***		.128*		.138**		.112***
	Access	.347	.195**	.247	.052**	.301	.101	.248	.029	.259	.094**
	Distress	.462	−.230***2nd	.391	−.165***4th	.464	−.134*4th	.402	−.172***4th	.395	−.147***4th
	Coping	.508	.011	.447	.051*	.519	.102*	.472	.062	.437	.030
	Personal Satisfaction	.528	.136**4th	.497	.256***1st	.566	.296***1st	.510	.230***2nd	.484	.273***1st
	Practice Management	.531	.092*	.559	.081***	.571	.058	.514	.030	.492	.091***
	Fulfillment equity		.262**1st		.194***3rd		.177**3rd		.189***3rd		.220***3rd
	Pay equity		.107*		.051**		.012		.091***		.005
	Recognition equity	.611	.142**3rd	.601	.238***2nd	.622	.186***2nd	.615	.249***1st	.595	.224***2nd
		$df=182$	$df=2181$	$df=184$	$df=971$	$df=1144$					

GP: general practitioner.
[a]GP and specialists ($n=112$ excluded).
[b]Laboratory and technical specialists excluded ($n=351$).
*$p<.05$; **$p<.01$; ***$p<.001$.

between work and personal life, followed by recognition are the top two factors supporting SwC; however, for physicians early in their careers, fulfillment, distress and access to services for patients are the top three factors, followed by recognition and personal satisfaction is fifth. This is in agreement with the findings from the RCPSC that many new physicians have difficulties in establishing practices using the skills for which they have been trained[52] because the numbers of fully qualified specialist positions at hospitals are severely limited by constrained hospital budgets that control the supply of expense diagnostic and treatment equipment.[52] This particularly affects the resource-intensive specializations of gastroenterology, surgery, hematology, medical microbiology, nuclear medicine, ophthalmology, radiation oncology, urology and critical care.[52] In essence, more specialists are competing for fewer diagnostic and treatment resources needed by increasing numbers of older patients.[52,53]

In later career stages, many physicians welcome the challenge that academic responsibilities provide.[54] Our findings show that specialists, particularly at academic health centers tend to be more involved with academic responsibilities than GPs. Furthermore, constraints on the supply of technology in hospitals make sharing of diagnostic and treatment equipment among specialists necessary to the point where 30% of Canadians wait at least 2 months for an appointment with a specialist,[55] compared to 6% for Americans. In Canada, GPs are the first point of contact for most people, except for emergencies. However, emergency rooms are increasingly used as the first point of access by Canadians who cannot find a family doctor, and in 2014, between 3% and 15% of Canadians, depending on geographic location, do not have a family doctor.[56] The shortage of GPs has lengthened the workweek for existing GPs, leaving them less time for research and teaching and pressure to spend less time with each patient.[56] The shortage of physicians specializing in primary care appears to be increasing, partly due to low incomes compared to other specializations which make family medicine a less attractive choice for medical students who often carry large student loans.[52] GPs consider Recognition of their efforts to be more important than Personal Satisfaction with Life as a Physician. This may be reflective of their role as "gatekeepers" to the health care system in Canada.[30]

Quality issues compromise SwC

Although perceptions of quality, efficiency and access cannot replace objective measures for accreditation purposes; they do signal the need to design initiatives to improve the working conditions and well-being of physicians.[18] Physicians and nurses recognize poor quality and inappropriate care prior to formal reporting processes.[3] Similarly, physicians often perceive regulatory restrictions in accessing services as reductions in efficiency and compromises to access, both important factors of quality.[57]

The modest ratings of Access (45%–48%) and Quality (59%–60%) by physicians are consistent with the more detailed assessments collected by the Canadian Institute for Health Information (CIHI) which compared the performance of the Canadian Health Care System with the health systems of the other industrialized countries of the Organization for Economic Co-operation and Development (OECD). For Access, CIHI gathered data from the other OECD countries for the following: Waiting Time to See a Specialist, Waiting Time for Elective Surgery, Inequalities in Physician Visits, Unmet Health Care Needs and Out-of-Pocket Spending. In Canada, waiting times are much longer to see specialists and for elective surgery than in the other OECD countries, but frequency of visits to physicians and unmet needs are average, and out-of-pocket expenses are a bit less than average for Canadians.[58] This study found that the ratings of Access by clinical (44.8%), surgical (44.4%) and especially hospital-based technical specialists (41.3%) were worse than the ratings of Access by GPs (49.7%).

For Quality of Care, CIHI collected data on 20 defined medical procedures from the 34 OECD countries and arranged the results in percentiles, which showed that for 3 procedures (obstetrical trauma, accidental puncture and removal of foreign body), Canadian results were worse than the 50 percentile (average); for 6 procedures (30-day fatality: ischemic stroke, cervical cancer survival; 30-day fatality: hemorrhagic stroke, childhood measles vaccination, avoidable admissions for coronary obstructive pulmonary disease and postoperative pulmonary embolism), Canadian results were about average; and for 11 procedures (30-day fatality: heart attack, influenza vaccination for seniors, bipolar disorder readmissions, postoperative sepsis, breast cancer screening, colorectal cancer screening, avoidable admissions for diabetes, schizophrenia readmissions, cervical cancer screening, breast cancer survival and avoidable admissions for asthma), the results for the Canadian health care system were better than average.[59] This study found that the ratings of Quality by clinical (57.6%), surgical (56.2%) and especially hospital-based technical specialists (52.5%) were lower than the ratings of Quality by GPs (64.7%).

Physicians recognize that achieving positive clinical outcomes is not just due to technical competence; it also depends on their own capacity to gain trust and compliance of their patients in taking prescriptions and lifestyle advice.[60]

Academic physicians pursuing research and teaching along with clinical duties are particularly conscious of quality issues as they strive to resolve shortcomings in either knowledge or applications and endeavor to pass best practices on to medical students.[28,29] Committed administrative physicians are rare and their particular challenges in organizing clinical programs are allocating expensive resources to clinicians whose patients most need them and providing infrastructure support to those academic physicians whose research show promising results.[29]

Coping strategies and management skills support SwC

The results of this research were consistent with the findings of Lemaire and Wallace[21] that physicians used an extensive range of coping skills ranging from maintaining a positive attitude, viewing challenging tasks as opportunities to learn, calling on colleagues to seek advice, taking proper meal breaks, getting exercise, setting aside time for activities of professional interest, planning tasks to be done and discussing problems with staff. Furthermore, effective practice management has been associated with career satisfaction of physicians.[26] For specialists, the challenges appear to be handling a diverse mix of responsibilities within technological supply constraints, and for GPs, the challenges appear to be meeting the primary care needs of all their patients, appropriate referral of those patients with secondary needs and following up with all their patients.[30] In Canada, physicians join practice settings in accordance with their philosophies of practice, and patients benefit from the diversity of practice settings, choosing which setting to go to and which physician to see. Medical care is delivered privately while being financed publicly.[53]

Our results indicated that Coping strategies were positively correlated with effective Practice Management ($r = .25$, $p < .001$) and SwC ($r = .43$, $p < .001$); however, Practice Management was negatively correlated ($r = -.22$, $p < .001$) with Patient Care Duties. Organizational capacity appears to be a serious issue for many practices as Administrative Duties conflict with clinical duties.[43] Furthermore, physicians reported experiencing frequent conflicts between career responsibilities and the needs of their families, particularly when raising young children; however, cooperation among physicians in group practice can alleviate these conflicts.[61]

Appropriate rewards

The results of this study corroborate previous research on rewarding diligent professionals. Monetary compensation is significantly related to the career satisfaction of physicians; however, the sense of intrinsic accomplishment and recognition by administrators, nurses, peers and patients appear to be more important in supporting SwC. The duality of fulfillment and recognition reflects intrinsic pride of prowess and requisite status. Navigating regulatory hurdles for the use of diagnostics and treatment facilities and pressure to assume nonmedical tasks are perceived by most physicians as increases to their workloads. These efforts receive little recognition; instead, they are perceived as barriers in the daily grind of getting things done.[62]

The practice of medicine is both satisfying and dissatisfying at the same time, with professional aspects providing inherent, professional and performance satisfaction with fulfillment and recognition rewards, however, requiring sacrifices in personal life and, for some physicians, inequities in financial compensation. The satisfiers and rewards are motivators, but the sacrifices in personal life are dissatisfiers.[63] Most importantly, according to the classic two-factor theory of motivation, dissatisfiers can erode the motivators.[63] A job which has sufficient fulfillment and recognition can compensate for high workloads, and stress can be alleviated by coping strategies; however, when personal sacrifices, including financial inequities, become too great, overall career satisfaction, including SwC, suffers. Moreover, addressing the financial inequities will not alleviate sacrifices such as excessive interference with personal life and the inability to enjoy satisfying social or community activities. Health care organizations and group practices need to ensure that the work of physicians is organized in such a fashion that their personal lives are as satisfying as their professional lives.

The complex objectives of regionalized health systems create the need for commensurate reward structures for physicians. The fee-for-service system of payment rewards physicians for providing many services to patients and to accept patients with complex conditions. In contrast, salaried systems of payment are better suited for health promotion and preventive services, and capitation systems of payment encourage the involvement of allied health professionals as team members and efficient use of resources.[64] Base salaries, academic appointments, facilities for medical researchers and infrastructure support from academic medical centers have been successful in attracting academically inclined physicians, especially at larger medical schools.[28] However, none of these payment systems are well suited to encourage administrative duties. Implementing effective incentives for physicians to take on administrative duties are challenging since financial payments tend to be viewed as insufficient, respect and prestige conferred by colleagues often being more persuasive.[12] Blended systems have been tried in recent years because no one-payment system can meet all the objectives of complex health systems.[65]

Research limitations

The research design was cross-sectional; thus, relationships between variables should be considered as associations. Furthermore, the values of each measure are perceptions of physicians. Nevertheless, the sample was appropriately stratified, an adequate response rate obtained from a large study population, and bias found to be negligible. While the structure of the measures was adequately confirmed with reliability and factor analyses, additional research on practice settings, practice management and coping strategies is suggested. Although the models were in general agreement on the main factors that may support or compromise SwC, larger study populations of physicians in their early years of practice and for physicians corresponding in French should be conducted.

Conclusion

Administrators of regional health systems must understand that efficiency of operations, quality of personnel and equipment and access to health services influence the physician's SwC when providing care to patients. The medical community must also acknowledge that protocols to regulate appropriate use of equipment are necessary to ensure efficient operation of the health care system, such that all patients receive attention. Medical societies need to ensure that continuing medical education addresses practice management and stress issues.[66]

Our research showed that physicians in Canada are more satisfied with their abilities to maintain competencies than with Personal Satisfaction with Life as a Physician. Similarly, physicians reported higher levels of Fulfillment than Financial or Recognition equity. Our previous research showed that physicians are pragmatic in their support of health policies, in that they tend to choose whichever policy will provide them the most resources to work with.[57] For many years, provincial governments have used supply controls to constrain the budgets of hospitals restricting access to expensive diagnostic and treatment equipment for both physicians and patients.[52] Hence, the poor ratings of access and high levels of frustration in accessing services reported by physicians, as specific distressors in this study.

Despite these reservations, the vast majority of physicians in Canada are independent practitioners accepting standardized fees from the taxation-funded provincial insurance pools; however, a small minority of physicians are either salaried by hospitals or in totally private practice where they assume the risk of finding enough patients who are able to pay for elective medical services. The Canadian health system has been covering about 70% of health care expenses for everyone with the remaining 30% being covered equally by private sector insurance plans and direct out-of-pocket payments for several decades.[9,53] The purpose of Canadian Medicare as it has evolved since it was fully implemented in 1971 (when Quebec, joined) has not been to redistribute wealth but to provide a strong safety net capable of providing access to medically necessary health care to all residents of Canada.[7,9] The recent Affordable Care Act of the United States with fragile partisan support is a far more complicated and still evolving health care policy.[67] SwC among physicians is integral to the quality of health systems and when the organizational culture within physicians is characterized by shared values, effective management, collaboration and teamwork can flourish.[68]

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Appendix 1

Alignment of the dimensions of Career Satisfaction with the competencies of the Royal College of Physicians and Surgeons of Canada.

How satisfied are you with	Dimensions	Competencies
The doctor–patient relationships derived from providing patient care?	Inherent	Communicator
The diversity of patients you see (age, gender and clinical condition)?		Professional–medical expert
Your interactions and relationships with other physicians		Colleague
Your career advancement in Medicine?		Medical expert
Your authority to get clinical decisions carried out?	Professional[a]	Advocate–manager
Your interactions and relationships with nurses?		Collaborator–communicator
Your interactions and relationships with health care administrators?		Advocate–communicator
The way your medical practice is managed?[a]		Manager
Your success in meeting the needs of your patients?	Performance	Medical expert
Your ability to access resources needed to treat your patients?		Advocate–manager
Your capacity to keep up with advances in your clinical specialty?		Scholar
Your role in organizing treatment programs for patients in your community?		Manager–advocate
Your ability to control your work schedule?	Personal Satisfaction[b] with Life as a Physician	
Your ability to keep responsibilities at work from intruding on your personal life?		
Your ability to sustain satisfying activities in the community?		
Your earnings as a physician during your medical career?[b]		

All items are scored on 6-point Likert scales from *very dissatisfied* to *very satisfied*.

[a]The way your practice is managed can be considered from personal or professional viewpoints. Managing is part of RCPSC competency; therefore, the item was assigned to the professional dimension.

[b]Your earnings as a physician is primarily a personal issue and secondarily a professional issue. Since earnings have little to do with competence, the item was assigned to the personal dimension.

Appendix 2

Coping measure

Coping with stress.

	Never	A few times a year	Once a month	2–3 times a month	Once a week	2–3 times a week	Every day
Indicate how often you experience the following							
Feel excited about the work that you do?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Feel really good because a patient had resolved serious health issues?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Maintain an optimistic attitude throughout the workday?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Approach difficult tasks as opportunities to learn and develop skills?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
When you need to talk about a problem, there are colleagues available who can give you sound advice?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
A colleague is willing to take on extra work, so you can attend continuing medical education?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
If you needed a week off to attend to special needs, a colleague would fill in for you?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
How frequently do you							
Review tasks to be done for the day?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Discuss issues and problems with staff?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Spend time keeping up with or advancing your clinical knowledge or skills?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Set aside time to pursue activities of professional interest to you?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Eat a nutritious meal during the workday?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Pause for a relaxing break during the workday?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Engage in physical activity during the week?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Get a restful night's sleep?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix 3

Practice Management measure.

What kind of mechanism does your practice use for the following:	None	Informal	Formal
Strategic planning?	[ ]	[ ]	[ ]
Setting budgets or financial planning?	[ ]	[ ]	[ ]
Assessing the efficiency of operations?	[ ]	[ ]	[ ]
Evaluating the quality of services provided to patients?	[ ]	[ ]	[ ]
Evaluating the performance of staff?	[ ]	[ ]	[ ]
Documenting meetings about clinical services?	[ ]	[ ]	[ ]
Documenting meetings about administrative issues?	[ ]	[ ]	[ ]