On physician well being—You'll get by with a little help from your friends

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Abstract

This study identifies positive and negative factors associated with physician well being. We collected two sets of data from physicians at a university-based Department of Medicine in Western Canada. First, we conducted exploratory, in-depth interviews with 54 physicians to identify factors associated with their well being. Participants explained that certain aspects of their work are demanding and negatively related to their well being, whereas other 5 factors are more enabling and contribute positively. Second, we mailed a structured questionnaire including measures of the key factors identified in the physician interviews to all physicians in the same Department of Medicine. Multivariate analysis was used to assess the extent to which the factors identified in the interviews are significantly related to physicians' well being. The findings show the importance of co-worker support, both in terms of being directly related to physician well being as well as buffering the negative effects of work demands. We discuss several important implications for physicians and the organizations that employ them in understanding the factors related to physician well being. In addition, patient interactions appear to be both a key source of stress and a major source of satisfaction in physicians' daily work lives.
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Keywords: Canada; Physicians; Well being; Job stress; Coping strategies; Employment

Introduction

Recent studies suggest that almost half of practicing physicians find medical practice very or extremely stressful (Henry, 2004) and almost half are in the advanced stages of burnout (Robertson, 2002; Shanafelt, Sloan, & Habermann, 2003). Physicians are also twice as likely than the general population to report that their mental health is fair or poor (Cohen & Patten, 2005). As MacDonald and Davidson (2000) note:

> Suicide, alcohol abuse, drug abuse and marital discord can be the unfortunate outcomes of workplace distress. The medical profession is not immune. Researchers have long recognized that physicians may have even higher risks for these problems than nonphysicians (2000, p. 735).

One reason that stress and burnout may be extraordinarily high among physicians is that doctors are not very good at looking after themselves or seeking help from others (Arnetz, 2001; Firth-Cozens, 2001; Pullen, Lonie, Lyle, Cam, & Doughty, 1995). Moreover, doctors often rely on

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denial and avoidance as coping strategies, which are not particularly effective (Firth-Cozens, 2001). While 18% of Canadian physicians were identified as depressed, only 25% of them consider getting help and only 2% actually do (Canadian Medical Association, 2003). Arnetz (2001) refers to the "'ignorance, indifference and carelessness' of physicians towards their own health" (p. 204) as evidenced by their negligence in having physical examinations, procrastination in seeking medical treatment and higher than average suicide and cardiovascular mortality rates. Also related to denial and avoidance is the perceived stigma doctors associate with seeking help:

> An important obstacle in studying successful coping is the conspiracy of silence, that is, physicians might be reluctant to recognize or talk openly about psychological problems resulting from their professional experiences (Arnetz, 2001, p. 208).

Furthermore, the cultural values and norms associated with hospitals and certain specialties appear to counteract supportive communication, which is usually necessary for learning and coping in the health care system.

While many studies examine physician distress, burnout and depression, significantly less is known about physician well being (Arnetz, 2001; Shanafelt et al., 2005; Weiner, Swain, Wolf, Gottlieb, & Spickard, 2001). Moreover, much of the literature on physician well being is based on opinion rather than empirical data (Shanafelt et al., 2005). The notable dearth of empirical data on physician well being offers an important research opportunity that has critical practical implications for today's practicing physicians, their patients and the organizations that employ them.

The purpose of this study is to identify positive and negative factors associated with physician well being. Well being reflects the extent to which an individual finds meaning, and is authentically expressive of their self, in their life and work (Suchman & Zeldin, 2001), which may be indicated by an overall sense of satisfaction and balance in one's life. In addition, we explore whether receiving supportive resources from others significantly buffers the detrimental effects of factors that are negatively related to physician well being. In examining both questions, we rely on two cross-sectional data sets collected from practicing physicians.

The Study

We collected two sets of data from staff doctors and residents at a single university and health-region-based Department of Medicine in a large, metropolitan city in Western Canada. Ethical approval was obtained for conducting the interviews and circulating surveys to members of the Department of Medicine from the Conjoint Health Research Ethics Board (CHREB), which is also the review board for the University of Calgary. All participants were guaranteed confidentiality and that their responses would be presented in such a way that they could not be identified.

First, we conducted exploratory, in-depth interviews to identify key factors related to physician well being. In the interviews, physicians described their work experiences and how these experiences influence their quality of life. They explained that certain aspects of work are demanding and are negatively related to their well being, whereas other factors are more enabling and positively related. From the interviews, we identified key factors that we hypothesize are associated with physician well being.

The second data set was gathered using a questionnaire sent to all of the physicians in the same Department of Medicine. This larger, more representative sample allows us to use multivariate analyses to assess whether the factors identified in the interviews are statistically significant in their associations with physician well being. The questionnaire was designed to include measures of the key factors identified in the physicians' interviews (i.e., work demands and work resources).

The remainder of this paper is organized as follows. First, a more detailed description of the interviews conducted in the first stage of this study is provided. Second, the results of the interviews are discussed and the key factors identified by physicians are described. The themes participants voiced are presented in conjunction with a review of the literature as a strategy for developing a grounded model of physician well being that is tested with the questionnaire data. The specific variables used to test the hypotheses are also identified. Third, the methods used in collecting the questionnaire data are presented. Next, using multiple regression techniques, the hypotheses generated from the interview results are tested with the questionnaire data. Lastly, this paper closes with a discussion of the findings and the conclusions drawn from this study.

Interview data and methods

Sample

We invited 59 staff doctors and residents to participate in the interviews and 54 agreed to take part (response rate = 91%). The five who declined stated concerns over lack of time, confidentiality, and inability to represent department views because of their type of practice. A quota sampling strategy was used to select potential participants based on gender, division, rank, site/hospital affiliation, scholarly activity and family status.

Half (52%) of the interview participants are male, 87% are married and 69% are parents. Participants have worked approximately $9\frac{1}{2}$ years in the Department of Medicine (range = less than 1–27 years) and work almost 70 h a week in total at the office/hospital and at home (range = 33–103 h). Eleven percent of the interview participants were residents at the time of the study and the remaining participants were staff physicians.

Most members of this department are involved primarily in clinical work and many are also part of the teaching and research programs sponsored by the university. Staff physicians usually function as independent professionals with their work patterns cast by the patient-care centered, teaching and/or research responsibilities and expectations of their division. In contrast, residents have less flexibility in their work as their educational curriculum is based on national objectives of training, which must be completed by the end of the training period. A large percentage of a resident's work time consists of caring directly for patients in a hospital or outpatient setting, and includes after hours on call work. The patients referred to this university-based health care setting are typically more complex and have a higher likelihood of negative outcomes than those treated in other settings in this health care region.

Data collection

Interviews were conducted at the participant's convenience, usually during work hours at their office. The interview questions were mostly open-ended. Interviews generally lasted 1 h, although they ranged in duration from 30 to 95 min. The interviewer typed participants' responses into a notebook computer during the interview and reviewed her notes immediately after to correct any typo-graphical errors or omissions. The relevant questions for this paper are: (1) What constitutes "quality of life" in general for you on a personal basis? What does this mean for you, ideally? (2) What parts of your job do you like or enjoy the most, that give you the greatest sense of satisfaction? (3) What do you find to be the most stressful aspects of your job? (4) What do you do after a bad or hard day at work? How do you respond or how do you cope? and (5) What one thing do you think your family (e.g., spouse, parents, children, siblings) would change about your job if they could?

Data analysis

We used *HyperResearch*, a software package for qualitative data analysis, to analyze the interview responses. This software enables researchers to code and retrieve data and cases for analysis. The authors independently reviewed participants' responses to the interview questions. We did not use pre-established categories for analyzing the interview data. Rather, we used an inductive strategy through open and selective coding to derive the predominant themes reflected in the interview transcripts. We then went back to the original data and coded each response so as to compute frequencies for the number of participants who mentioned each theme. The percentages in brackets represent how many participants mentioned a particular theme. Participants often raised more than one theme.

Interview results: conceptual domains and hypotheses

The interview results are divided into three sections. The first section outlines physicians' perceptions of well being, which is used as the basis for our conceptualization and operationalization of this variable in the questionnaire. In the next two sections, we present the interview findings related to the two conceptual domains reflecting physicians' work demands and work resources. According to the doctors interviewed, excessive work demands are negatively related to their sense of job satisfaction, well being and quality of life, whereas different groups of people provide work-related resources and/or support that have more positive effects. These two conceptual domains are discussed in greater detail below by integrating illustrative quotes from the interviews with the relevant literature. We also explicitly identify the variables

and hypotheses that are empirically assessed using the questionnaire data.

What constitutes well being for practicing physicians?

In conceptualizing and operationalizing well being for this paper, we rely on physicians' responses to the question asking what "quality of life" means to them. Many emphasized the importance of having time for interests outside of medicine (46%), their family (48%), themselves (24%) and enough time to maintain a healthy and active lifestyle (20%). The following quote illustrates the importance of having a balanced life and time for interests outside of medicine:

> It's all kind of about balance, you know. And I think it's healthy to have some time away from work. It's probably healthy to have time for oneself as well, which means getting away from everybody.

A number of participants mentioned how important it is to be satisfied with their life and work (41%), as well as finding it meaningful and challenging (24%). The following quote illustrates these themes:

> I think quality of life is being happy both in your work and your home, being able to, being allowed to do what you enjoy to do in both places, to the quality and standards to which you want to do them.

Based on the themes raised by interview participants, we define well being as an overall sense of satisfaction and balance in one's life. The measure of well being used in the subsequent quantitative analysis is described in the Data and Methods section below relevant to the questionnaire stage of this study.

What factors are negatively related to physician well being?

Interview participants identified several work demands negatively related to their well being. Approximately, half (43%) indicated that the most stressful aspect of their job was feeling overwhelmed with their workload, which is often due to the sheer number of patients that need to be seen, perceived time limitations in seeing patients and the lack of control over these factors. For example:

> Chaos at work, so feeling like all the demands of the hospital and everybody else, that there's no way of controlling it, that is very stressful for me. Six consults in, eight patients to see on the ward, feeling like I need to somehow manage that on my own is stressful.

On a similar theme, one quarter (26%) identified the sheer amount of work or work volume as the most stressful part of their work and 22% indicated that time pressures and deadlines were the most stressful. In addition, some often found it difficult to multi-task and juggle different work-related responsibilities. Other physicians report the inability to leave the office on time because of excessive work demands. The following quote illustrates these concepts:

> Oh, being at three places at once, so the time pressure of, you know, being late in clinic, having patients waiting. You're an hour behind, they're getting grumpy, you have to take a phone call, you can't stay on schedule. Then the unpredictability of the workday, on the ends, so getting home on time, I find that most stressful.

Participants also described how trying to work under such conditions contributed to feelings of exhaustion, fatigue and guilt.

> Work volume, work overload… it's not just the time crunch, but because of that, I'm not doing the kind of job I'd be proud of, the kind of job I'd hope someone would do for me or my family.

Throughout the literature, workload has been consistently identified as the number one factor related to job stress and burnout (Wallace, 2005). This finding is no different for doctors (Jagsi & Surender, 2004; Li, Yang, & Cho, 2006; Linn, Yager, Cope, & Leake, 1985):

> One of the commonest and most strongly perceived causes of stress at work is to do with high demands or overload. This area concerns a fast, hectic pace, conflicting demands, too little resource or support, too long hours of work and, conversely, too little sleep (Firth-Cozens, 2001, p. 218).

In addition, rapid and recent changes to the practice of medicine, such as increased patient care demands, the introduction and frequent updating of information technology, reimbursement issues, growing bureaucratization of medical practice,

increased accountability, declining autonomy, and conflict between the needs of the organization and patients are all potential threats to physician well being (Bartell & Smith, 2004; Dunstone & Reames, 2001; Edwards, Kornacki, & Silversin, 2000; Freeborn, Schmoldt, Klevit, & Marton, 2001; McMurray et al., 1997; Menachemi & Brooks, 2006; Shanafelt et al., 2005; Visser, Smets, Oort, & de Haes, 2003). These mounting trends have been characterized as evidence of "hamster health care" where "across the globe doctors are miserable because they feel like hamsters on a treadmill" (Morrison, 2000, p. 1541).

Based on these themes identified in the interviews and a review of the relevant literature, we included two different measures of workload in the questionnaire: *work hours* and *work overload*. Work hours reflect the total number of hours physicians work per week at the office and at home. Work overload refers to the extent to which the demands of the job are felt to be excessive (Wallace, 1999).

In addition to workload, about half (43%) of the interview participants described how the acuity, severity and/or chronic conditions of patients is particularly stressful for them, as illustrated in the following quotes:

> I think patient care, although it can be very satisfying, it can be a source of enormous stress… And I think people are very unrealistic about the limitations of medical science.

> So patient care I think can be very stressful. And if you're a conscientious doctor, it's stressful—have I made the right decision? The right diagnosis? The right treatment? And there's always the guilt when people get a side effect.

The literature supports the notion that the patient–physician relationship can provide the most gratifying experiences in medicine, but also the most severe emotional stresses as well (Arnetz, 2001; McMurray et al., 1997). Interactions with patients and their families are often emotionally charged and stressful. Emotional stressors specific to medicine include working with psychologically intense issues that involve suffering, fear, failures and death (Arnetz, 2001). Based on themes identified in the interview data, we examined the *emotional demands* associated with practicing medicine in the questionnaire by the extent to which they are overwhelming or all encompassing.

Many of the physicians we interviewed indicated that having a good quality of life meant having time for their family, interests outside of medicine and for themselves. When asked what they think their families would change about their jobs, the resounding response was "spend less time at work and more time at home" (70%). Interview participants aspire to have a better quality of life by bringing less work and work-related stress home and by having more predictable work hours. This idea of work overflowing into one's non-work time reflects the work-to-family conflict concept identified in the literature. It illustrates how the emotional demands of being a doctor are not easily switched on and off when they enter or leave work. Two participants reflected as follows:

> That I spend more time at home and when I'm at home be less stressed. You go home feeling drained and can't spend quality time with the family.

> The hours. My youngest son when he was about three-years old, he said to me one day "Mommy, I wish you were just a mommy and not a doctor".

Doctors tend to prioritize their professional careers at the expense of their personal lives (Dumelow, Littlejohns, & Griffiths, 2000). Reports abound of physicians' work interfering with their home and/or family life and the difficulties they experience in attempting to balance their professional and personal lives (Linn et al., 1985; Visser et al., 2003; Shanafelt et al., 2005). *Work-to-family conflict* was included in the questionnaire reflecting the extent to which the demands associated with work interfere with physicians' home and family life.

Based on the interview results, in combination with the review of the literature, we hypothesize:

H1. Greater work demands (work hours, work overload, emotional demands, work-to-family conflict) will be negatively related to physician well being.

What factors are positively related to physician well being?

Interview participants identified different groups of people who provide work-related resources and/ or support that they felt were positively related to their well being. In coping with work stress, one

third (33%) of the participants talk to their spouse (who may or may not be a physician) and 15% talk to other doctors or colleagues. For example, one interview participant told us:

> I talk to my husband. He's a good person to talk to. If it's still at work, I'll talk to colleagues. We've got a really good group, three individual colleagues are good sources there, and then at home, my husband is a good source.

Social support is an interpersonal coping resource where one person helps another and it often involves talking to someone who is supportive and understanding (Ross & Mirowsky, 1989). In the questionnaire, we assessed social support from two different sources —co-workers and spouses. *Co-worker support* is the extent to which colleagues are helpful in actually dealing with the stresses of the job, which is referred to as instrumental support in the stress literature. Instrumental support involves providing material or concrete assistance in response to the individual's specific needs, such as information or help with one's work (House, 1981; Wallace, 2005). *Spouse support* is the extent to which their partner empathizes with the stresses of their job, which is described as emotional support in the stress literature. Emotional support may involve the provision of affection, sympathy and understanding so that the individual feels cared for and supported (House, 1981; Wallace, 2005).

While the medical profession has a poor reputation for providing mutual support or giving and receiving feedback (Edwards et al., 2000), social support from colleagues has been found important in contributing to physicians' job satisfaction and well being and reducing job stress (Freeborn et al., 2001; Horowitz, Suchman, Branch, & Frankel, 2003; Li et al., 2006; Visser et al., 2003). Similarly, the literature suggests that physicians who have a supportive spouse are less likely to suffer from burnout, report greater marital satisfaction and spend more time with their family, which are also positively related to work satisfaction and well being (Dunstone & Reames 2001; Marchand, Demers, & Durand, 2005; Sotile & Sotile, 2004; Shanafelt et al., 2005).

Almost half of the interview participants (44%) identified caring for, having contact with, or interacting with patients as the most satisfying aspect of their job. Thirty-nine percent reported that having a positive impact on patients and successful patient outcomes are the most gratifying parts of their work. The following two quotes illustrate the positive aspects of patient care.

> Seeing a patient do well, that is the single most important thing…Getting positive feedback is icing on the cake.

> I think when I meet a sick patient, they are on the verge of life and death, at the end, from the work I do, I can discharge them home, they are happy and healthy. That's like the happiest time in the job, in my professional life.

In the questionnaire, we measure the extent to which physicians feel they are positively influencing others in terms of *positive patient interactions*. While certain aspects of patient relationships may be stressful for physicians, other aspects are vital to having a satisfying and challenging medical career. A key motivation for going into medicine is the desire to help others and positive patient interactions offer important personal rewards to physicians (Arnetz, 2001). According to the literature, connecting with patients, satisfying physician–patient relations and feeling they are making a difference in someone's life are all important predictors of physician well being (Dunstone & Reames, 2001; Horowitz et al., 2003; McMurray et al., 1997). Taken together, support from one's co-workers and spouse and positive patient interactions may be classified as work resources.

H2. More work resources (from co-workers, spouse and patients) will be positively related to physician well being.

In the stress literature, there are two basic hypotheses regarding the role of social support. The "main effect" hypothesis suggests that support exerts a direct effect on outcomes regardless of the amount of stress a person experiences. That is, social support and positive patient interactions simply improve one's health and well being. This argument is reflected in Hypothesis 2 above. The "buffer", or interaction, effect hypothesis suggests that social support moderates the negative effects of stress on well being (House, 1981). That is, individuals experiencing highly demanding work conditions, in combination with high levels of work resources, will report a better sense of well being compared to those working under similarly demanding work conditions but who receive fewer resources from others.

H3. Work resources (from co-workers, spouse, or patients) will moderate the relationships of work demands on well being. More specifically, the negative relationship between work demands and well being will be stronger for physicians with fewer work resources.

Questionnaire data and methods

Sample

We sent 275 questionnaires to all physicians and residents in the same Department of Medicine where the interviews were conducted. Six weeks later, a reminder letter accompanied by a second copy of the survey were set out to all those who had not yet responded. We received 182 completed surveys, yielding a 66% response rate.

To assess the representativeness of the survey participants, the questionnaire sample data can be compared with data available on all 275 members' sex and division in the Department of Medicine. At the time of the survey, of the 226 staff physicians in the Department, 75% were male and 25% were female and in the sample, 74% are male and 26% are female. In addition, 39% of the 49 resident physicians were male and 61% were female in the Department, and in the sample 44% are male and 56% are female. The χ^2 results indicate that there are no statistically significant differences between the gender distributions in the Department of Medicine for staff and resident physicians and those in the sample ($\chi^2 = .037$ (1), n.s. and $\chi^2 = .231$ (1), n.s., respectively). In addition, comparisons were made between the percentage of members in the Department's 11 divisions and those in the sample (results available from authors) and the χ^2 results again indicate no statistically significant difference in this regard ($\chi^2 = 1.752$ (10), n.s.). Based on the results of these comparisons, the sample data appear representative of the Department along these two characteristics.

Table 1 presents descriptive statistics for the doctors who completed the questionnaire.

The results in Table 1 show that our survey participants average approximately 64 work hours a week in total at the office/hospital and at home. More than half (68%) of the participants are men, 88% are married and 60% are parents. They have worked in the Department of Medicine for almost 12 years on average (Mean = 11.79). Fifteen percent of the survey participants were residents at the time of the study.

Table 1
Descriptive statistics of questionnaire sample ($N = 182$)

Variable	Mean (SD)
Well being	2.26 (0.67)
Work demands	
Total work hours	64.15 (16.77)
Work overload	2.31 (0.82)
Emotional demands	3.06 (0.94)
Work-to-family conflict	2.45 (0.93)
Work resources	
Co-worker support	2.63 (1.03)
Spouse support	2.01 (0.98)
Positive patient interactions	1.86 (0.62)
Control variables	
Sex	
Male	68%
Female	32%
Marital status	
Married	88%
Not married	12%
Parental status	
Parent	60%
Not a parent	40%
Department tenure	11.79 (10.61)
Resident status	
Resident	15%
Staff physician	85%

Data collection

A mail-out questionnaire was constructed that measured themes raised in the interviews. Upon identifying the interview themes, we then turned to established measures in the literature to operationalize those concepts, usually in the form of closed-ended, Likert items. Unless otherwise indicated, the response categories are between 1 ("Strongly Disagree") and 5 ("Strongly Agree"). Cronbach's alpha coefficients (α) are reported for all multiple-item measures.

Well being was measured by four Likert items that tap the extent to which physicians feel they have a balanced life (Marks & MacDermid, 1996), and the degree to which they are satisfied with their life (Diener, Emmons, Larsen, & Griffin, 1985), their job (Brayfield & Rothe, 1951), and the way their career is going (Greenhaus, Parasuraman, & Wormley, 1990) ($\alpha = .76$).

Four variables reflect physicians' work demands: total work hours, work overload, emotional demands and work-to-family conflict. *Total work hours* was measured by the question: "On average, in a typical week, how many hours do you work in total

(including evenings and weekends)?'' Respondents estimated how many hours they worked at the office and how many hours at home. Given the nature of their jobs, "at the office" may include a variety of locations, such as a hospital, clinic or the university. We computed the total average number of hours they work per week by summing their estimates of their weekly work hours at the office and at home. *Work overload* was measured by three Likert items from Caplan, Cobb, and French (1975) that reflect the extent to which physicians feel their workload is too heavy, they do not have enough time to get everything done in their job and they find it difficult to meet the demands of their patients, colleagues, hospital and university ($\alpha = .76$). *Emotional demands* were measured by two Likert items from Fimian, Fastenau, and Thomas (1988) that tap the degree to which respondents feel emotionally drained from work and find it takes a long to relax after they leave work ($\alpha = .70$). *Work-to-family conflict* was measured by a single item from Netemeyer, Boles, & McMurrian (1996) that assesses the extent to which work demands interfere with physicians' home and family life.

Co-worker support was measured by a single item from Thomas and Ganster (1995) that indicates the degree to which physicians' colleagues are good at helping them resolve work-related problems. *Spouse support* was measured by a single item from Thomas and Ganster (1995) tapping the degree to which their partner empathizes with the stresses of their job. *Positive patient interactions* was assessed by a single item asking about the extent to which physicians feel they are positively influencing other people's lives through their work.

Five control variables were included in the analysis: physician's sex, marital status, parental status, tenure in the Department of Medicine and whether they were a resident or staff physician. *Sex (male)* was coded 1 for men and 0 for women. *Marital status* was coded 1 for married or living common law and 0 if not. *Parental status* was coded 1 if respondents had any children were currently living at home and 0 if not. *Tenure* was calculated by subtracting the year they began working in the Department of Medicine from the year of the survey. *Resident* was coded 1 for resident physicians and 0 for staff physicians.

Data analysis

Ordinary least squares (OLS) regression was used to estimate the magnitude of relationships between work demands and work resources and physicians' well being. The regression results are presented as standardized coefficients in Table 2. The two main effect hypothesis (H1 and H2) are tested in Equation 1. In addition, the buffer hypothesis (H3) was tested by determining whether the cross-product interaction terms between work demands and work resources have statistically significant relationships with well being. To do this, four models were estimated, one for each work demand variable (Equations 2–5). In each equation, the specific work demand (e.g., total work hours) and its three cross-product terms (i.e., by co-worker support, by spouse support and by patient interactions) were entered simultaneously into the equation. Empirical support for the buffer hypothesis is indicated by statistically significant negative, cross-product interaction coefficients.

Questionnaire results

Table 2 presents the regression results. The findings reported in Equation 1 provide partial support for Hypothesis 1. Work overload and emotional demands are negatively related to physician well being as predicted, whereas work hours and work-to-family conflict are not. That is, the greater work overload and the more emotional demands physicians experience from work, the poorer their well being. Emotional demands from work have the strongest negative relationship with physicians' well being.

Some literature suggests that work-to-family conflict might be more relevant to women with children (e.g., Li et al., 2006). Further analyses were conducted (results not shown) to see whether this variable was moderated by physician's gender and/ or parental status. A statistically significant three-way interaction was found for work-to-family conflict by gender and parental status. Due to the small sub-sample sizes, subgroup regression analyses (e.g., for mothers compared to fathers) were not possible. Comparisons of the zero-order correlations between work-to-family conflict and well being, however, show that the relationship is considerably stronger for mothers ($r = -.60$) compared to other gender and parental categories (i.e., they range from $-.33$ to $-.42$). Moreover, 86% of mother physicians report work-to-family conflict compared to 62% of fathers and lesser degrees for non-parents. That is, work-to-family conflict is more highly related to well being for mothers than

Table 2
Standardized regression results for physician well being ($N = 182$)

Determinants	Eq. 1	Eq. 2	Eq. 3	Eq. 4	Eq. 5
	Main effects model	Work hours interactions	Work overload interactions	Emotional demands interactions	Work-to-family interactions
	β	β	β	β	β
Work Demands					
Total work hours	0.030	−0.312	0.014	0.033	0.040
Work overload	−0.142**	−0.126*	0.296	−0.098*	−0.112*
Emotional demands	−0.242***	−0.346***	−0.326***	0.567**	−0.345***
Work-to-family conflict	−0.085	−0.075	−0.075	−0.087	0.461*
Work Resources					
Coworker support	0.120**	0.119	0.431***	0.660***	0.442***
Spouse support	0.181***	0.120	0.672***	0.589***	0.538***
Positive patient interactions	0.318***	−0.103	0.160	0.305***	0.299**
Control Variables					
Sex (1 = Male)	0.021	−0.001	−0.014	0.018	0.000
Marital status (1 = Married)	0.010	−0.003	0.013	−0.015	0.007
Parental status (1 = Parent)	0.000	0.000	−0.012	0.014	−0.006
Department tenure	−0.066	−0.080	−0.040	−0.070	−0.070
Resident status (1 = Resident)	0.047	0.020	0.049	0.048	0.053
Interaction Tests[a]					
By coworker support		−0.006	−0.419*	−0.653***	−0.432**
By spouse support		−0.095	−0.644***	−0.517***	−0.445**
By patient interactions		0.512	0.274	−0.282*	0.021
R^2	0.446	0.458	0.489	0.499	0.474
F	10.553***	8.554***	9.835***	10.208***	9.247***
ΔR^2	—	0.012	0.043***	0.053***	0.028***

*$p < 0.10$; **$p < 0.05$; ***$p < 001$.

[a]The interaction tests are based on the inclusion of multiplicative interaction terms for each work demand by each work resource (e.g., in Eq.2, these terms include work hours × coworker support, work hours × spouse support and work hours × patient interactions). A statistically significant interaction coefficient indicates that the relationship between that particular work demand (refer to column title) and physician well being depends on the amount of physicians' work resources (i.e., either coworker support, spouse support or patient interactions).

fathers or male or female physicians who are not parents.

Corroboration is provided for Hypothesis 2 where support from one's co-workers and spouse and feeling one has a positive influence through their work are all important work resources related to physician well being. It is interesting to note that the psychological rewards associated with positive patient impact is most strongly related to physicians' well being. None of the control variables are statistically significant.

Turning next to the tests of the buffer hypothesis (H3), none of the work resources buffered the relationship between work hours and physician well being and their addition to the model did not yield a

significant increment in the R^2 (Equation 2). This means regardless of the amount of work resources physicians receive, their total work hours are simply unrelated to their well being. The results are quite different, however, for the other three work demand variables. We see that for all three, co-worker and spouse support are significant buffers. Patient interactions significantly buffers the relationship between emotional demands and physician well being. These findings suggest that if doctors receive more enabling resources from their co-workers and spouse, the negative relationships between work overload (Equation 3), emotional demands (Equation 4) and work-to-family conflict (Equation 5) and well being are reduced more than if they do not have

such a supportive work and home environment. Doctors with more psychologically rewarding patient interactions also experience a less severe negative association between emotional demands and their well being than those who have less rewarding patient interactions (Equation 4). This pattern of findings corroborates the buffer hypothesis for work overload, emotional demands and work-to-family conflict.

Discussion and conclusions

This paper set out to explore what work-related factors are important in understanding physician well being. In developing a model of well being, we analyzed in-depth qualitative interviews with physicians and reviewed the relevant literature. Using this strategy, two key concepts were identified as related to physician well being: (1) work demands; and (2) work resources. We hypothesized that work demands would be negatively related to well being and work resources would be positively related. We found partial support for our work demands hypothesis and corroboration for our work resources hypothesis. We also examined whether work resources buffer the negative relationships between work demands and physician well being, and we found considerable empirical support for this hypothesis.

The results of this study have several important implications for physicians and the organizations that employ them. First, the findings highlight the importance of co-worker support, both in terms of being directly related to physician well being as well as buffering the negative effects of work demands. This suggests that a more open and supportive work atmosphere should be beneficial to physicians (Arnetz, 1999, 2001). Team building may be one strategy to enhance communication and support amongst colleagues. Physicians feel considerably less stressed when they feel they are part of a good team and this may be due to the support that team members offer one another (Firth-Cozens, 2001). Team or co-worker relations may be strengthened by organizing retreats, team-building exercises, offering staff opportunities to provide feedback to management, working towards common goals, or social events (Arnetz, 2001; Shanafelt et al., 2003). Clearly specifying organizational or department goals may also be effective in reducing organizational stress and improving members' overall well being (Arnetz, 2005). Unnecessary stress can be

diminished if leadership increases employees' awareness of organizational goals and involves staff in management decisions. Another related strategy may involve enhancing the management styles and skills of senior doctors who often supervise, mentor and observe those they work with. In doing so, those in leadership positions may be better able to recognize doctors at risk, provide a safe "no-blame" means of identifying and discussing concerns about oneself or one's colleagues, and raise awareness and support of internal and external counseling services (Firth-Cozens, 2001). For example, provincial programs such as "The Physician and Family Support Programs" sponsored by the Alberta Medical Association, recognize that even good physicians sometimes need help. These programs actively promote a culture of care and concern for colleagues by offering assessment, treatment and case coordination so that physicians can achieve a successful and sustained return to work (Maier, 2004). By offering support to physician families, these programs also appreciate the importance of spousal support, which we found significantly enhances physician well being and buffers negative work demands.

A second interesting finding is that the two variables that have the strongest relationships with physician well being (refer to Equation 1) are emotional demands ($\beta = -.24$) and positive patient interactions ($\beta = .32$). This supports the belief that patient interactions are both a key emotional stress for physicians as well as an essential source of satisfaction in their daily work lives. As two interview participants explained:

> The patient side, which to me is supposed to be the rewarding side, it's what I love, but by the end of the day leaves you unsatisfied, putting out fires and no time for quality patient care. Being called to see ten patients who are dying that day, that you have to see, you do the clinical minimal necessary. You actually never get to take care of the whole patient.

> What really gives me the most satisfaction is really challenging clinical problems and really sick patients and being able to improve things that way… It can be the most frustrating, the most heartbreaking, but you also get the most satisfaction. You get somebody who says, even years after, they feel they have their life back.

Moreover, the results of the interaction tests (Table 2, Equation 4) show that the negative relationship between emotional demands, which is often associated with stressful patient encounters, is buffered by positive patient interactions. This suggests that although practicing medicine may be emotionally draining for physicians, the more positive influence they have on their patients, the weaker the relationship between the emotionally demanding aspects of their work and their well being. That is, having a positive impact on patients buffers the negative effect of emotionally demanding work on physician well being.

In order to better understand physician well being, future research may examine how particular aspects of patient care function in these opposing ways. For example, Linzer et al. (2000) developed questionnaire items where some tap negative aspects of patient care, such as overwhelming or adversarial patient relationships, inadequate time with patients, or patients' demands for unnecessary treatment. Other items reflect positive aspects of patient care in terms of having a strong personal connection to patients or receiving gratitude from patients. By using more fine-grained approaches to measuring patient care and relationships, we may be able to determine which specific aspects are more stressful and which are more beneficial to physician well being.

Several unexpected findings also deserve further discussion. First, for work demands, work hours and work-to-family conflict, were unrelated to physician well being. Instead, the more subjective sense of being overwhelmed by one's work (i.e., work overload) and emotional demands appear more detrimental to physicians' well being. Similar findings have been reported elsewhere for other professionals (e.g., Wallace, 1999). The different relationships of working long hours, compared to work overload and emotional demands, may reflect that being overwhelmed by the demands of one's work is not only invasive of one's time and energy but also one's well being long after the individual has left work. Work hours, while limiting the available time for other roles and activities, do not necessarily translate into emotional or psychological spillover beyond the hours worked.

Work-to-family conflict also failed to have a significant relationship with physicians' well being. As the supplemental analyses reported above suggest, work-to-family conflict is more highly related to well being for mothers than fathers or male or female physicians who are not parents. Future research with larger samples should investigate how work demands and resources may have different effects on well being depending on physicians' gender and parental status. It would also be interesting to examine whether there are differences in the amounts of work demands and resources these groups experience.

In closing, several limitations of this study must be noted. First, the cross-sectional nature of this study means that concerns regarding causal ordering may be raised. Some variables related to well being included in the regression analysis may be outcomes of well being. For example, physicians who have a better sense of well being may trigger more support than the reverse. A more accurate model requires a longitudinal approach to disentangle causes from outcomes, as well as document possible changes in well being over physicians' life course and career stages. Second, this study focused on physicians working in a large university hospital setting in a large city. Future research may explore how the factors related to well being vary across different work settings. For example, different work demands and resources might be more or less relevant to physicians in other settings. Given the importance of the buffering effects of co-worker support for this particular sample of physicians, it is critical to identify alternate sources of support for doctors who work in smaller, more private settings. Lastly, the small sample size restricted comparisons among physicians with different demographic characteristics. The limited analyses that were possible suggest that relevant variables may differ significantly depending on physicians' gender and parental status. Subsequent studies with sufficiently large samples may examine these and other factors (e.g., resident status) in greater detail in order to gain a more comprehensive understanding of physician well being.

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