

# Predictors of job satisfaction among academic family medicine faculty

*Findings from a faculty work-life and leadership survey*

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## Abstract

**Objective** To identify predictors of job satisfaction among academic family medicine faculty members.

**Design** A comprehensive Web-based survey of all faculty members in an academic department of family medicine. Bivariate and multivariable analyses (logistic regression) were used to identify variables associated with job satisfaction.

**Setting** The Department of Family and Community Medicine at the University of Toronto in Ontario and its 15 affiliated community teaching hospitals and community-based teaching practices.

**Participants** All 1029 faculty members in the Department of Family and Community Medicine were invited to complete the survey.

**Main outcome measures** Faculty members' demographic and practice information; teaching, clinical, administration, and research activities; leadership roles; training needs and preferences; mentorship experiences; health status; stress levels; burnout levels; and job satisfaction.

Faculty members' perceptions about supports provided, recognition, communication, retention, workload, teamwork, respect, resource distribution, remuneration, and infrastructure support. Faculty members' job satisfaction, which was the main outcome variable, was obtained from the question, "Overall, how satisfied are you with your job?"

**Results** Of the 1029 faculty members, 687 (66.8%) responded to the survey. Bivariate analyses revealed 26 predictors as being statistically significantly associated with job satisfaction, including faculty members' ratings of their local department and main practice setting, their ratings of leadership and mentorship experiences, health status variables, and demographic variables. The multivariable analyses identified the following 5 predictors of job satisfaction: the Maslach Burnout Inventory subscales of emotional exhaustion and personal accomplishment; being born in Canada; the overall quality of mentorship that was received being rated as very good or excellent; and teamwork being rated as very good or excellent.

**Conclusion** The findings from this study show that job satisfaction among academic family medicine faculty members is a multi-dimensional construct. Future improvement in overall level of job satisfaction will therefore require multiple strategies.

### EDITOR'S KEY POINTS

- In 2011, the Department of Family and Community Medicine at the University of Toronto in Ontario conducted a survey to collect information on faculty members' work life and their opinions about issues related to leadership, professional development, mentorship, and job satisfaction. The purpose of this study was to identify variables associated with job satisfaction among the faculty members.
- In this study, 89.7% of faculty members reported that they were satisfied or very satisfied with their job. This study's multivariable model shows that job satisfaction is a multi-dimensional construct that includes health status variables (levels of emotional exhaustion and personal accomplishment), a demographic variable (born in Canada), and faculty members' perceptions of their work-life experience (quality of mentorship received) and their environment (teamwork).

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# Les prédicteurs de satisfaction au travail pour les professeurs en médecine familiale

Résultats d'une enquête portant sur la vie professionnelle et le leadership chez les professeurs

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## Résumé

**Objectif** Déterminer les prédicteurs de satisfaction au travail chez des professeurs en médecine familiale.

**Type d'étude** Une enquête détaillée par Internet auprès de tous les professeurs d'un département universitaire de médecine familiale. Des analyses bivariées et multivariées (régression logistique) ont été utilisées pour cerner les variables associées à la satisfaction au travail.

**Contexte** Le département de médecine familiale et communautaire de l'Université de Toronto, en Ontario, et ses 15 hôpitaux d'enseignement communautaires et cliniques d'enseignement du milieu communautaire affiliés.

**Participants** Tous les professeurs du département de médecine familiale et communautaire (N = 1029) ont été invités à répondre à l'enquête.

**Principaux paramètres à l'étude** Les données démographiques des professeurs et leur mode de pratique; leurs activités comme enseignants, cliniciens, administrateurs et chercheurs; leurs besoins et préférences en matière de formation; leur expérience du mentorat; leur état de santé; leur niveau de stress et d'épuisement; et leur satisfaction au travail. Ce qu'ils pensent de l'aide fournie, de la reconnaissance, des communications, de la rétention, de la charge de travail, du travail en équipe, du respect, de la distribution des ressources, de la rémunération et des structures de soutien. La satisfaction au travail, le principal paramètre à l'étude, dépendait de la réponse à la question suivante: «Dans l'ensemble, quel est votre niveau de satisfaction au travail?»

**Résultats** Sur les 1029 professeurs, 687 (66,8%) ont répondu à l'enquête. Les analyses bivariées ont défini 26 prédicteurs qui avaient une association significative avec la satisfaction au travail, y compris les cotes attribuées par les professeurs à leurs départements respectifs et à leurs principaux lieux de pratique, celles attribuées au leadership et à leur expérience du mentorat, aux variables de l'état de santé et aux données démographiques. Les analyses multivariées ont déterminé les 5 prédicteurs de satisfaction au travail suivants: l'évaluation de l'épuisement émotionnel et de la réussite personnelle par la sous-échelle du *Maslach Burnout Inventory*; le fait d'être né au Canada; le fait de considérer que la qualité globale du mentorat reçu était très bonne ou excellente; et le fait de juger le travail d'équipe comme très bon ou excellent.

**Conclusion** Les résultats de cette étude montrent que pour les professeurs de médecine familiale, la satisfaction au travail dépend d'un ensemble de facteurs. Toute amélioration de cet aspect de la vie de ces médecins nécessitera donc de multiples stratégies.

### POINTS DE REPÈRE DU RÉDACTEUR

• En 2011, le département de médecine familiale et communautaire de l'Université de Toronto, en Ontario, a mené une enquête pour connaître l'opinion des professeurs sur leur vie professionnelle et sur leurs opinions concernant des questions liées au leadership, au développement professionnel, au mentorat et à la satisfaction au travail. Cette étude avait pour but de définir des variables associées à la satisfaction professionnelle chez les professeurs.

• Dans cette étude, 89,7% des professeurs ont déclaré être satisfaits ou très satisfaits de leur travail. Le modèle multivarié de cette étude montre que la satisfaction au travail est le résultat de plusieurs facteurs, y compris des variables liées à la santé (les niveaux d'épuisement et de réussite professionnelle), une variable démographique (être né au Canada) et l'opinion qu'ont les professeurs de leur expérience professionnelle (la qualité du mentorat reçu) et de leur milieu (le travail d'équipe).

Cet article a fait l'objet d'une révision par des pairs.  
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Academic family medicine faculty members are involved in a range of activities, including teaching those at the undergraduate and postgraduate levels, providing clinical care, mentoring (faculty, staff, and students), and participating in research and quality improvement activities and various administrative roles. Understanding how these faculty members perceive their roles and environment is crucial in order to attract, retain, and nurture them for future leadership roles and continued excellence. Although little has been published regarding predictors of job satisfaction among academic family medicine faculty members, previous studies have indicated that factors such as stress, burnout, and perceptions about the workplace are associated with job satisfaction and job turnover among physicians and academic physicians in general.<sup>1-10</sup> Other studies have identified an association between mentorship received and job satisfaction among family physicians.<sup>11,12</sup>

Furthermore, a review of the literature on physician job satisfaction (not specifically academic family medicine faculty members) found that physician job dissatisfaction was associated with reduced patient quality of care and patient dissatisfaction with care received.<sup>6</sup> Extrapolating on this, it is reasonable to infer that job dissatisfaction among academic family medicine faculty members negatively affects the quality of their performance in other activities (teaching, mentoring, research, etc). Given the diverse roles of academic family medicine faculty members, it is very important to understand their opinions about their work life. In 2011, the Department of Family and Community Medicine (DFCM) at the University of Toronto in Ontario conducted a survey to collect information on faculty members' work life and their opinions about issues related to leadership, professional development, mentorship, and job satisfaction. The purpose of this study was to identify variables associated with job satisfaction among academic family medicine faculty members.

## METHODS

### Setting

The DFCM at the University of Toronto is the largest department of family medicine in North America. At the time of the survey there were 1029 faculty members (no tenure track or tenured faculty), 248 postgraduate trainees, 226 clinical clerks, 26 faculty members with protected research time funded by the DFCM, and more than 20 family medicine teaching units. Clinical teaching and research also took place in dozens of community-based practices and clinics.

### Questionnaire development

We developed the survey questions by reviewing the literature, incorporating findings from an earlier qualitative leadership study conducted at the DFCM, reviewing questions from the DFCM Leadership Task Force, and considering the types of data needed to answer various primary and secondary research questions (ie, the data needed to conduct meaningful multivariable analyses). We met frequently to refine questions and consider issues of reliability, validity, and readability, as well as the potential for being offensive, leading, or biased. Validated measures were included wherever possible (eg, self-rated health status, stress, Maslach Burnout Inventory [MBI]). We pretested the questionnaire with content experts, methodologists, and potential respondents. The questionnaire was revised and formatted as an online Web-based survey and received minor revisions after pilot-testing with 12 potential respondents.

The final questionnaire collected information on the following: demographic characteristics; practice settings; teaching, clinical, administration, and research activities; past and present leadership roles; training needs and preferences; mentorship opportunities (received and given); job satisfaction; health status; stress; and burnout. It also collected information about perceptions of supports provided, recognition, communication, retention, workload, teamwork, respect, resource distribution, remuneration, and infrastructure support. The response categories for these latter questions were 5-point Likert scales (eg, not at all important to very important). The questionnaire can be obtained by contacting the corresponding author.

### Survey promotion

To improve participation, we implemented activities to help promote and legitimize the survey. Before launching, we made presentations at the DFCM executive meetings to inform and garner support from all family medicine chiefs and division directors. In addition, we hung posters at all sites, made announcements on the DFCM website, sent e-mail communications via the DFCM list server to all faculty members, and advertised the survey in the DFCM newsletter and news digest. After launching, we sent a revised poster to all sites and sent new announcements via the list server, website, and news digest. As an incentive, faculty members had a chance to win 1 of 4 prizes (2 tablet computers and 2 \$100 gift certificates).

### Survey implementation

We used a modified Dillman approach.<sup>13</sup> On launch day, a personalized e-mail request was sent to each faculty member on behalf of the DFCM Chair that contained a link to the survey. Two days later, we sent a personalized request from the DFCM Chair to each of the family medicine chiefs and division directors to e-mail their respective

faculty members to complete the survey. Five days later, we sent a personalized e-mail to all faculty members thanking those who had completed the survey and reminding those who had not, to do so as soon as possible. Subsequently, we sent 3 personalized e-mail reminders to the declining number of nonrespondents at weekly intervals.

## Analysis

Before the analysis, we reached consensus on the most appropriate way to recode the categorical response data. Questions that used 5-point Likert scales were collapsed into 2 meaningful categories. For example, we collected information about several distinct constructs, such as perceptions of workload, retention, teamwork, respect, and support. Each construct contained several questions that were rated using a 5-point Likert scale (response options were from poor to excellent). Questions within each of these constructs were conceptually highly correlated and when tested were found to have high internal consistency. Therefore, within each construct we dichotomized the mean (from all questions) into ratings of less than 4 (1=poor, 2=fair, 3=good) and 4 or more (4=very good, 5=excellent) to come up with an overall rating for each construct (eg, a dichotomous rating for the construct “teamwork” that represented either very good and excellent or poor, fair, and good). The outcome variable, job satisfaction, was obtained from the question, “Overall, how satisfied are you with your job?” We dichotomized job satisfaction into those who indicated they were very satisfied and other responses.

Before analysis, we selected the variables to include as potential predictors of job satisfaction. We used bivariate analyses (*t* test and  $\chi^2$  test, as appropriate) to identify which variables were statistically significantly associated with job satisfaction. Descriptive statistics (numbers and percentages or means and standard deviations) were calculated for each potential predictor, along with *P* values, odds ratios (ORs), and their 95% CIs.

We included the statistically significant variables from the bivariate analyses in an iterative stepwise logistic regression analysis approach to identify a parsimonious set of predictors of job satisfaction. Adjusted ORs and corresponding 95% CIs are reported. We assessed the goodness of fit or usefulness of the final logistic regression model using a number of statistical techniques including the  $\rho^2$  statistic.<sup>14</sup> Ethics approval was obtained from the University of Toronto.

## RESULTS

### Participant characteristics

Of the 1029 academic family medicine faculty members, 687 (66.8%) responded. The demographic characteristics of the sample were as follows: a mean age of 47 years

(range 29 to 82 years); 52% were women; 87% were married or living with a partner; 72% were white; and 76% were born in Canada. Forty percent of participants reported working at their current site for 5 years or less, 30% for 6 to 15 years, and 30% for 16 or more years. Overall, faculty members reported working on average 46 hours per week, with 88% having on-call duties.

### Bivariate analysis

Of the 687 respondents, 623 (90.7%) responded to the job satisfaction question, with 89.7% of faculty members reporting that they were satisfied or very satisfied with their job (38.8% and 50.9% reported being satisfied and very satisfied, respectively). **Table 1** reports the statistically significant findings from the bivariate analyses. Of the 26 statistically significant predictors of job satisfaction, 11 were faculty members' ratings of their local department, 1 was related to faculty members' main practice, 3 were leadership and mentorship experience variables, 6 were health status variables, and 5 were demographic variables.

### Multivariable analysis

We excluded highly correlated variables from the modeling process (eg, both stress and burnout were not included). The final adjusted logistic regression model (**Table 2**) contained 5 predictors of job satisfaction: having higher levels of emotional exhaustion (OR=0.90, 95% CI 0.88 to 0.92) based on the MBI emotional exhaustion subscale (a continuous variable in which higher scores indicate higher emotional exhaustion, resulting in lower job satisfaction); having a higher personal accomplishment score (OR=0.87, 95% CI 0.83 to 0.91) based on the MBI personal accomplishment subscale (a continuous variable in which higher scores indicate less personal accomplishment resulting in lower job satisfaction); being born in Canada (OR=2.22, 95% CI 1.33 to 3.69); rating the overall quality of mentorship received as very good or excellent (OR=3.32, 95% CI 1.51 to 7.31); and rating local teamwork as very good or excellent (OR=1.86, 95% CI 1.19 to 2.90).

## DISCUSSION

The bivariate findings demonstrate the range of variables that were statistically significantly associated with job satisfaction. The logistic regression analysis identified 5 independent predictors of job satisfaction: the MBI emotional exhaustion and personal accomplishment subscales; place of birth; overall quality of mentorship received; and rating of teamwork. The MBI consists of 3 subscales, 2 of which were retained in the final logistic regression model. The emotional exhaustion subscale reflects the stress dimension of burnout,<sup>9</sup> indicating

**Table 1. Potential predictors of job satisfaction among family medicine faculty members: Of the 623 participants, 317 reported that they were very satisfied with their job, while 306 provided another response.**

POTENTIAL PREDICTOR VARIABLES	OVERALL JOB SATISFACTION*		P VALUE†	ODDS RATIO (95% CI)*
	VERY SATISFIED, N (%)	OTHER RESPONSE, N (%)		
<b>Ratings of local department<sup>§</sup></b>				
Overall support for teaching, research, leadership, mentorship, and career (n = 601)				
• Very good or excellent	209 (56.2)	163 (43.8)		2.17 (1.55–3.04)
• Good, fair, or poor	85 (37.1)	144 (62.9)	<.001	Reference
Overall recognition of teaching, research, leadership, mentorship, and career support (n = 595)				
• Very good or excellent	215 (55.0)	176 (45.0)		2.06 (1.46–2.91)
• Good, fair, or poor	76 (37.3)	128 (62.7)	<.001	Reference
Communication (n = 601)				
• Very good or excellent	158 (54.3)	133 (45.7)		1.50 (1.09–2.07)
• Good, fair, or poor	137 (44.2)	173 (55.8)	0.013	Reference
Leadership (n = 588)				
• Very good or excellent	171 (56.6)	131 (43.4)		1.89 (1.36–2.62)
• Good, fair, or poor	117 (40.9)	169 (59.1)	<.001	Reference
Mission, vision, and values (n = 534)				
• Very good or excellent	176 (58.1)	127 (41.9)		1.85 (1.31–2.61)
• Good, fair, or poor	99 (42.9)	132 (57.1)	<.001	Reference
Workload and practice (n = 555)				
• Very good or excellent	208 (55.0)	170 (45.0)		2.39 (1.65–3.46)
• Good, fair, or poor	60 (33.9)	117 (66.1)	<.001	Reference
Teamwork (n = 546)				
• Very good or excellent	130 (61.3)	82 (38.7)		2.22 (1.57–3.16)
• Good, fair, or poor	139 (41.6)	195 (58.4)	<.001	Reference
Physician involvement in programs and planning (n = 549)				
• Very good or excellent	175 (56.1)	137 (43.9)		1.94 (1.38–2.74)
• Good, fair, or poor	94 (39.7)	143 (60.3)	<.001	Reference
Resource distribution for clinical work, teaching, and research (n = 527)				
• Very good or excellent	173 (54.2)	146 (45.8)		1.68 (1.18–2.39)
• Good, fair, or poor	86 (41.3)	122 (58.7)	.004	Reference
Remuneration (n = 540)				
• Very good or excellent	171 (53.4)	149 (46.6)		1.69 (1.19–2.39)
• Good, fair, or poor	89 (40.5)	131 (59.5)	.003	Reference
Respect (n = 577)				
• Very good or excellent	145 (59.2)	100 (40.8)		2.06 (1.48–2.89)
• Good, fair, or poor	137 (41.3)	195 (58.7)	<.001	Reference

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Table 1 continued from page e181

POTENTIAL PREDICTOR VARIABLES	OVERALL JOB SATISFACTION*		P VALUE†	ODDS RATIO (95% CI)‡
	VERY SATISFIED, N (%)	OTHER RESPONSE, N (%)		
<b>Rating of main practice setting<sup>  </sup></b>				
Infrastructure support (n = 595)				
• Very good or excellent	212 (57.5)	157 (42.5)		2.46 (1.75–3.47)
• Good, fair, or poor	80 (35.4)	146 (64.6)	<.001	Reference
<b>Leadership and mentorship experiences</b>				
Held a senior leadership role in the past (n = 474)				
• Yes	152 (56.1)	119 (43.9)		1.64 (1.13–2.36)
• No	89 (43.8)	114 (56.2)	.008	Reference
Rating of the overall quality of mentoring received (n = 595)				
• Very good or excellent	275 (51.5)	259 (48.5)		2.99 (1.65–5.42)
• Good, fair, or poor	16 (26.2)	45 (73.8)	<.001	Reference
Rating of the importance of receiving mentoring in current role (N = 623)				
• Neutral, not very, or not at all	115 (55.0)	94 (45.0)		1.43 (1.02–2.00)
• Somewhat or very	191 (46.1)	223 (53.9)	.036	Reference
<b>Health status variables</b>				
Self-rated health status (n = 622)				
• Very good or excellent	289 (54.3)	243 (45.7)		2.78 (1.71–4.49)
• Good, fair, or poor	27 (30.0)	63 (70.0)	<.001	Reference
Self-rated stress at work in the past year (n = 622)				
• Not at all, not very, or a bit	210 (42.7)	282 (57.3)		3.79 (2.47–5.83)
• Quite or extremely stressful	96 (73.8)	34 (26.2)	<.001	Reference
Self-rated stress in life in the past year (n = 622)				
• Not at all, not very, or a bit	226 (44.3)	284 (55.7)		3.14 (2.01–4.91)
• Quite or extremely stressful	80 (71.4)	32 (28.6)	<.001	Reference
Maslach Burnout Inventory rating for emotional exhaustion <sup>¶</sup> (N = 623)				
• Mean (SD) score	14.40 (8.017)	25.89 (11.280)	<.001 <sup>#</sup>	0.89 (0.87–0.91)
• Number	317	306		
Maslach Burnout Inventory rating for depersonalization <sup>**</sup> (N = 623)				
• Mean (SD) score	3.78 (3.661)	7.07 (5.621)	<.001 <sup>#</sup>	0.85 (0.82–0.89)
• Number	317	306		
Maslach Burnout Inventory rating for low personal accomplishment <sup>++</sup> (N = 623)				
• Mean (SD) score	4.90 (5.414)	9.49 (6.462)	<.001 <sup>#</sup>	0.86 (0.83–0.89)
• Number	317	306		

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Table 1 continued from page e182

POTENTIAL PREDICTOR VARIABLES	OVERALL JOB SATISFACTION*		P VALUE†	ODDS RATIO (95% CI)‡
	VERY SATISFIED, N (%)	OTHER RESPONSE, N (%)		
<b>Demographic variables</b>				
Sex (n = 620)				
• Male	174 (53.7)	150 (46.3)		1.44 (1.05-1.98)
• Female	132 (44.6)	164 (55.4)	.023	Reference
Marital status (n = 616)				
• Married or living with partner	281 (52.4)	255 (47.6)		1.65 (1.03-2.67)
• Other	32 (40.0)	48 (60.0)	.038	Reference
Ethnocultural background (n = 613)				
• White	238 (53.6)	206 (46.4)		1.48 (1.04-2.12)
• Other	74 (43.8)	95 (56.2)	.030	Reference
<b>Rating of main practice setting<sup>  </sup></b>				
Born in Canada (n = 622)				
• Yes	256 (54.5)	214 (45.5)		1.83 (1.26-2.66)
• No	60 (39.5)	92 (60.5)	.001	Reference
Age, y (n = 604)				
• ≥ 50	151 (59.0)	105 (41.0)		1.75 (1.26-2.43)
• < 50	157 (45.1)	191 (54.9)	.001	Reference

\*Obtained from the question, "Overall, how satisfied are you with your job?" The dichotomous outcome variable was created from the response options very dissatisfied, dissatisfied, not sure, satisfied, or very satisfied.

†Using  $\chi^2$  test.

‡Unadjusted odds ratios for categorical variables represent comparisons with the referent group (odds ratio = 1.00). An odds ratio greater than 1.00 indicates increased likelihood of being very satisfied. For example, men were 1.44 times more likely to be very satisfied with their jobs than women were. Odds ratios for continuous variables represent increase per unit change in the predictor variable. Odds ratios less than 1.00 represent a decrease in job satisfaction. For example, for each unit increase in the personal accomplishment subscale of the Maslach Burnout Inventory (which represents less personal accomplishment), participants were 0.86 times as likely to be very satisfied with their jobs (ie, are less satisfied with their job).

§Location of primary local department affiliation.

||Location of main practice setting.

¶A measure of feelings of being overextended and exhausted by work. Higher scores indicate higher emotional exhaustion. Scale ranges from 0 to 54.

#Using *t* test.

\*\*A measure of unfeeling and impersonal response toward recipients of instruction or care, for example. Higher scores indicate higher levels of depersonalization. Scale ranges from 0 to 30.

††A measure of feelings of successful achievement in work. Scored in the opposite direction such that higher scores indicate less personal accomplishment. Scale ranges from 0 to 48.

that academic family medicine faculty members who experienced increased levels of emotional exhaustion through their work were less likely to be satisfied with their jobs. This finding is consistent with the general job satisfaction literature. We also found a second MBI subscale, personal accomplishment, or the feeling of effectiveness in achievement within one's job, to be an important predictor of job satisfaction, which is in keeping with what might reasonably be expected.

We found that faculty members who were born in Canada were more than twice as likely to be satisfied with their jobs compared with faculty members who were not. A 2007 study from the United States (not specifically related to academic family medicine faculty) reported that foreign-born academics had lower work

satisfaction than faculty members born in the United States.<sup>15</sup> A qualitative study among physician faculty in the United States similarly found that foreign-born faculty members had lower professional satisfaction and suggested that this might be related to barriers such as lack of mentorship.<sup>16</sup> Additional research (eg, focus groups and interviews) is required to better understand the possible reasons for this finding.

We found that faculty members who rated the overall quality of mentoring that they received as being very good or excellent were more than 3 times more likely to be satisfied with their jobs than those who rated the quality of their mentoring experiences as being lower. This finding appears consistent with the literature that suggests that mentorship is associated with job

**Table 2. Final multivariate logistic regression model of predictors of job satisfaction among family medicine faculty: Hosmer-Lemeshow goodness-of-fit test = 0.792;  $\rho^2 = 0.13$  (pseudo  $R^2$  values between 0.2 and 0.4 suggest a very good fit); Cox Snell  $R^2 = 0.333$ ; Nagelkerke  $R^2 = 0.444$ ;  $N = 525$  (of the 623 participants, 98 (15.7%) had missing values for 1 or more of the variables included in the final model.**

PREDICTORS OF JOB SATISFACTION	ADJUSTED ODDS RATIO (95% CI)*
Maslach Burnout Inventory emotional exhaustion subscale <sup>†</sup>	0.90 (0.88-0.92)
Maslach Burnout Inventory personal accomplishment subscale <sup>†</sup>	0.87 (0.83-0.91)
Faculty member born in Canada	
• Yes	2.22 (1.33-3.69)
• No	Reference
Rating of the overall quality of mentoring received	
• Very good or excellent	3.32 (1.51-7.31)
• Good, fair, or poor	Reference
Rating of teamwork	
• Very good or excellent	1.86 (1.19-2.90)
• Good, fair, or poor	Reference

\*Odds ratios for categorical variables represent comparisons with the referent group (odds ratio = 1.00) after adjustment for all other variables in the model. An odds ratio greater than 1.00 indicates increased likelihood of being very satisfied. For example, those who rated their overall quality of mentoring received as very good or excellent were 3.32 times more likely to be very satisfied with their jobs than those who rated their mentorship as good, fair, or poor after adjusting for all other variables in the model. Odds ratios for continuous variables represent increase per unit change in the predictor variable. Odds ratios less than 1.00 represent a decrease in job satisfaction. For example, the personal accomplishment subscale scores range from 0 to 48. For each unit of increase (which represents less personal accomplishment), participants are 0.87 times as likely to be very satisfied with their job (ie, are less satisfied with their job).

<sup>†</sup>Higher scores indicate higher emotional exhaustion.

\*Higher scores represent less personal accomplishment.

satisfaction.<sup>11,12</sup> A 2014 study also found a statistically significant association between several aspects of mentoring and career satisfaction among junior academic faculty.<sup>17</sup>

Finally, we found that faculty members who rated teamwork between physicians and staff (eg, nursing, allied health, and administrative support) and among other physicians as being very good or excellent were nearly twice as likely to be satisfied with their jobs as those who rated teamwork lower. Little has been published about the relationship between teamwork and job satisfaction in academic family medicine faculty, possibly because interdisciplinary primary care teams are relatively new. However, the nursing and health services literature suggests that higher

levels of teamwork are associated with greater job satisfaction.<sup>18-22</sup> A meta-analysis of studies of nurses' job satisfaction identified nurse-physician collaboration as strongly correlated with job satisfaction.<sup>23</sup>

### Strengths and limitations

The strengths of this research include the comprehensive questionnaire based on findings from previous research and rigorous pretesting and pilot-testing. We conducted the survey in the largest department of family medicine in North America and obtained a good participation rate that resulted in a large sample size. A limitation of this research was that it was conducted in a single academic department of family medicine. However, as the issues are common to academic medicine in many settings, the findings might be generalizable, particularly for large, multisite departments. In addition, the findings appear to agree with the published literature and might be of relevance and value for others studying job satisfaction in similar populations.

### Conclusion

Our multivariable model showed that job satisfaction is a multi-dimensional construct that includes health status variables, a demographic variable, and faculty perceptions of their work-life experience (quality of mentorship received) and their environment (teamwork). Although overall job satisfaction was high in this population, efforts to further improve job satisfaction among academic family medicine faculty members will need to address multiple constructs.

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#### Contributors

All authors contributed to the concept and design of the study; data analysis and interpretation; and preparing the manuscript for submission.

#### Competing interests

None declared

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#### References

- Bunton SA, Corrice AM, Pollart SM, Novielli KD, Williams VN, Morrison LA, et al. Predictors of workplace satisfaction for U.S. medical school faculty in an era of change and challenge. *Acad Med* 2012;87(5):574-81.
- Pololi LH, Krupat E, Civian JT, Ash AS, Brennan RT. Why are a quarter of faculty considering leaving academic medicine? A study of their perceptions of institutional culture and intentions to leave at 26 representative U.S. medical schools. *Acad Med* 2012;87(7):859-69.
- Bovier PA, Arigoni F, Schneider M, Gallacchi MB. Relationships between work satisfaction, emotional exhaustion and mental health among Swiss primary care physicians. *Eur J Public Health* 2009;19(6):611-7. Epub 2009 Apr 29. Erratum in: *Eur J Public Health* 2010;20(4):481.



4. Keeton K, Fenner DE, Johnson TR, Hayward RA. Predictors of physician career satisfaction, work-life balance, and burnout. *Obstet Gynecol* 2007;109(4):949-55.
5. Lowenstein SR, Fernandez G, Crane LA. Medical school faculty discontent: prevalence and predictors of intent to leave academic careers. *BMC Med Educ* 2007;7:37.
6. Williams ES, Skinner AC. Outcomes of physician job satisfaction: a narrative review, implications, and directions for future research. *Health Care Manage Rev* 2003;28(2):119-39.
7. Demmy TL, Kivlahan C, Stone TT, Teague L, Sapienza P. Physicians' perceptions of institutional and leadership factors influencing their job satisfaction at one academic medical center. *Acad Med* 2002;77(12 Pt 1):1235-40.
8. Pathman DE, Konrad TR, Williams ES, Scheckler WE, Linzer M, Douglas J. Physician job satisfaction, dissatisfaction, and turnover. *J Fam Pract* 2002;51(7):593.
9. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol* 2001;52:397-422.
10. Gerrity MS, Pathman DE, Linzer M, Steiner BD, Winterbottom LM, Sharp MC, et al. Career satisfaction and clinician-educators. The rewards and challenges of teaching. *J Gen Intern Med* 1997;12(Suppl 2):S90-7.
11. Saperstein AK, Viera AJ, Firnhaber GC. Mentorship and job satisfaction among Navy family physicians. *Mil Med* 2012;177(8):883-8. Erratum in: *Mil Med* 2013;178(9):1009.
12. Levine RB, Lin F, Kern DE, Wright SM, Carrese J. Stories from early-career women physicians who have left academic medicine: a qualitative study at a single institution. *Acad Med* 2011;86(6):752-8.
13. Dillman DA, Smyth JD, Christian LM. *Internet, mail, and mixed-mode surveys. The tailored design method*. 3rd ed. Hoboken, NJ: John Wiley and Sons; 2009.
14. Wrigley N. *Categorical data analysis for geographers and environmental scientists*. New York, NY: Longman; 1985. p. 49-62.
15. Corley EA, Sabharwal M. Foreign-born academic scientists and engineers: producing more and getting less than their U.S.-born peers? *Res Higher Educ* 2007;48(8):909-40.
16. Price EG, Gozu A, Kern DE, Powe NR, Wand GS, Golden S, et al. The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. *J Gen Intern Med* 2005;20(7):565-71.
17. DeCastro R, Griffith KA, Ubel PA, Stewart A, Jagsi R. Mentoring and the career satisfaction of male and female academic medical faculty. *Acad Med* 2014;89(2):301-11.
18. Kalisch BJ, Xie B, Ronis DL. Train-the-trainer intervention to increase nursing teamwork and decrease missed nursing care in acute care patient units. *Nurs Res* 2013;62(6):405-13.
19. Kalisch BJ, Lee H, Rochman M. Nursing staff teamwork and job satisfaction. *J Nurs Manag* 2010;18(8):938-47. Epub 2010 Oct 4.
20. Krueger P, Brazil K, Dalby D, Sebaldt R. *Predictors of job satisfaction in long-term care facilities*. Waterloo, ON: Wilfrid Laurier University Health Sciences Faculty Publications; 2007. Available from: [http://scholars.wlu.ca/cgi/viewcontent.cgi?article=1010&context=hesc\\_faculty](http://scholars.wlu.ca/cgi/viewcontent.cgi?article=1010&context=hesc_faculty). Accessed 2017 Feb 16.
21. Ward M, Cowan S. Job satisfaction in psychiatric nursing. *J Psychiatr Ment Health Nurs* 2007;14(5):454-61.
22. Krueger P, Brazil K, Lohfeld L, Edward HG, Lewis D, Tjam E. Organization specific predictors of job satisfaction: findings from a Canadian multi-site quality of work life cross-sectional survey. *BMC Health Serv Res* 2002;2(1):6.
23. Zangaro GA, Soeken KL. A meta-analysis of studies of nurses' job satisfaction. *Res Nurs Health* 2007;30(4):445-58.

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