

Relationships between work satisfaction, emotional exhaustion and mental health among Swiss primary care physicians

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Background: Work-related satisfaction is an important determinant of quality of care. However, its relationship with doctors' mental health is poorly understood. It could have an independent beneficial effect on mental health (direct association) or simply reduce the impact of work stress on mental health (moderating or 'buffering' role). **Methods:** One thousand seven hundred and thirty-two Swiss primary care physicians (824 board-certified generalists, 436 general internists, 162 paediatricians, 147 internal medicine specialists and 163 physicians without specialty qualification) completed a mailed questionnaire. Previously, validated instruments were used to measure mental health (SF-12), emotional exhaustion [Maslach Burnout Inventory (MBI)] and work-related satisfaction. Linear regression models with mental health as dependant variable were used to study the relationships between these variables. Differences in mental health scores were standardized to represent a one standard deviation (SD) difference in the other scales [standardized beta coefficients (SBC)]. **Results:** In multivariate analyses, higher levels of mental health were found in respondents with higher work-related satisfaction with current income and social prestige (SBC 1.04) and professional relations (SBC 0.57), and in respondents with lower emotional exhaustion (SBC -4.98) and higher personal accomplishment scores (SBC 1.72). Interaction terms between these dimensions of work-related satisfaction and emotional exhaustion were significant, supporting a 'buffering' role of these dimensions. **Conclusion:** Work-satisfaction with current income, social prestige and professional relations are important correlates of mental health among primary care physicians, as well as emotional exhaustion. Higher levels of these dimensions of work-related satisfaction seems to mitigate the relationship between emotional exhaustion and physicians' mental health.

Keywords: burnout, mental health, physicians' health, primary care, work-related satisfaction.

Introduction

Various occupational factors affect physicians' health and well-being. Some have positive or protective effects, whilst others have a negative influence. Among factors that have a positive effect, job-related satisfaction has been described as an important factor that enable physicians to support the high-stress load that they encounter everyday. Occupational health models emphasize that mental health depends on work-related satisfaction and job stress. Work-related satisfaction is the result of various aspects of work, that can be modulated by social support, work control and autonomy, and balance between work and private life.¹⁻⁴ Over the last years several studies tended to consider work-related satisfaction as having a central role in physicians' mental health.⁵⁻⁸ Several authors have also shown that physicians' work-related satisfaction is multidimensional. However, so far no published study has reported which of these different dimensions is most important for physicians' health and well-being.

Among factors that have a negative effect, physicians who are overwhelmed by external stressors and cannot cope

anymore with their usual tasks generally present signs of professional exhaustion also called 'burnout', which can result in mental health problems, such as severe depression.⁹⁻¹³ Burnout has been characterized among health professionals by high levels of emotional exhaustion and depersonalization and decreased levels of personal accomplishment. Burnout is closely related with dissatisfaction at work,⁶⁻⁸ bad quality of care,^{12,14-16} or intention to withdraw from practice.^{17,18}

The main objective of our article was to study how the different aspects of work-related satisfaction eventually play a role in protecting physicians against the negative impacts of too much stress in their daily activities. In this model, the three dimensions of burnout reflect the impact of occupational stressors on physicians' health. According to the Effort-Reward Imbalance model¹⁹ health is the result from the balance between work efforts and rewards that includes salary, prestige or job security. Cross-sectional studies among Spanish²⁰ and Dutch⁸ general practitioners, and UK hospital consultants⁶ suggested that work satisfaction is a protective factor for physicians' mental health against the stress of medical practice. In a longitudinal study of UK hospital consultants, an increase of work stress in the absence of a comparable increase in work satisfaction was associated with a significant decline in mental health over time.⁷ However, how job stress interacts with the different aspects of work-related satisfaction is still poorly understood. Based on these works, work-related satisfaction could have an independent beneficial effect on mental health (direct association) or simply reduce the impact of work stress on mental health (moderating or 'buffering' role).

In recent years, Swiss primary care physicians have been subject to increased economic constraints and administrative workload and decreased work autonomy, increasing their risk of stress-related health problems.⁹ In this study, we explored

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the relationships between satisfaction towards work-related burden, personal rewards, current income, social prestige, patient care and professional relations, job stress dimensions measured by the Maslach Burnout Inventory (MBI)²¹ (emotional exhaustion, depersonalization and personal accomplishment) and mental health in a large sample of Swiss primary care physicians.

Methods

Setting

At the time of the survey (2002), the Swiss Medical Association (Federatio Medicorum Helveticorum) membership database included approximately 14 000 community-based physicians for a population of 7.2 millions. Approximately one-half (7700, 55%) were considered as primary care physicians. To achieve social solidarity, a Health Insurance Law (1994) makes compulsory the purchase by households of a fairly comprehensive package of health benefits, which includes ambulatory treatment, inpatient care, home nursing care and some health promotion activities; it can be contracted from approximately 90 private insurance carriers. Insurers can offer different schemes for health care provision such as 'any-willing-provider' or preferred providers' contracts (general practitioner-gatekeeper model or restricted network of providers). Restriction on the choice of the provider results in lower premiums for the patient. These changes resulted in increased competition, higher administrative burden, and decreased work autonomy for health care providers.

Study design and population

A postal survey was conducted during the spring of 2002 among Swiss primary care physicians identified through the membership database of the professional organization of Swiss physicians (Federatio Medicorum Helveticorum). All community-based generalists, general internists, paediatricians and physicians without a specialty qualification (7711 physicians) were included, which correspond to the primary care workforce in Switzerland according to the Swiss College of primary care medicine. Among these physicians, a random sample of 3000 was drawn. After exclusion of three deceased physicians, eight physicians with incorrect addresses and 233 physicians who did not practice as primary care physicians, 2756 (91.9%) physicians remained eligible for the survey, representing 36% of all Swiss primary care physicians.

The study protocol and questionnaire was approved by the research ethics committee of the Institute of Social and Preventive Medicine at the University of Geneva.

Measure of mental health

Physicians' health was measured by the SF-12 health survey (version 1),^{22,23} that has been tested in numerous countries and translated into several languages.²⁴ Answers to SF-12 items were used to compute summary scores of physical and mental health, standardized to mean 50 and standard deviation (SD) 10 in the general US population.²² A 5-points difference reflects, therefore, a change of half a SD, a change considered as clinically significant in the literature (e.g. difference in physical and mental health scores between 'healthy' respondents and those who suffer from chronic allergies or back pain); a 10-points difference on the mental health scale reflects a difference between 'healthy' respondents and those with depression.

Measure of socio-demographic characteristics, burnout and work-related satisfaction

Physicians' characteristics included socio-demographic (sex, age and civil status) and professional characteristics (medical specialty, place and type of practice), and workload [self-estimated total work time (hours) per week].

The MBI²¹ consisting of three subscales was used to measure emotional exhaustion (nine items), depersonalization/cynicism (five items) and personal accomplishment (eight items). This instrument has been used by several authors in different settings^{7-10,12,14,25,26,28-30} and found to be reliable, valid and easy to administer among physicians.²⁷ Because, we were interested to study how these different components would affect physicians' mental health, we used each score separately in the analyses.

Work-related satisfaction was measured by a 17-items instrument.² The instrument started with a general statement: 'Please indicate how satisfied you are with the following aspects of your professional life'. This statement was then followed by specific items (e.g. 'Your current income', 'The way you are currently paid (fee-for-service, salary, capitation, etc.)', 'Your social status and the respect people show you', 'Your intellectual stimulation at work', 'Your opportunities for continuing medical education', 'Your enjoyment at work'). For each item, the answer scale ranged from 'extremely dissatisfied' (1) to 'extremely satisfied' (5).

An explanatory factor analysis using principal component analysis with varimax rotation identified five underlying dimensions of satisfaction (Appendix available at *EURPUB* Online). The five-factor solution contained few cross-loadings and captured 63% of the total variance in physicians' responses. The first factor was interpreted as the work-related 'burden' dimension, the second as the 'personal rewards' derived from work, the third as the 'income-prestige' dimension, the fourth as the 'patient care' dimension and the last as reflecting 'professional relations' with fellow health professionals. Subscales scores were constructed by averaging items that were grouped by factor analysis, whenever half or more of the corresponding items were not missing. Internal consistency of these scales was satisfactory ('burden': 0.78; 'personal rewards': 0.69; 'income-prestige': 0.81; 'patient care': 0.64; 'professional relations': 0.52). The general satisfaction item was significantly associated with all five scores (Pearson coefficients: 0.30-0.58). Subscales were only moderately correlated with each other (Pearson coefficients: 0.22-0.52). Each subscale was used separately in the statistical analyses.

Translation of the questionnaire

The development of the questionnaire and the procedure used for its translation has been reported in a previous publication.⁹

Statistical analysis

The summary score of physical and mental health and the subscales of the MBI and work satisfaction were reconstructed according to the algorithms of the original works. Student *t*-test and analysis of variance were used to test differences in mean mental health score across levels of socio-demographic categorical variables; test for linear trend was performed when the categorical variable was measured on an ordinal scale. Relationships between mental health and work-related satisfaction and MBI were explored by computing mean scores of physical and mental health across tertiles of the different subscales. Pearson correlation coefficients were also used to study correlations between these subscales.

To explore the effects of the different dimensions of work-related satisfaction on the association between job stress

and mental health, linear regression models were used with mental health as dependant variable. Mental health scores were standardized to mean 50 and SD 10. All other scores were standardized to mean 0 and SD 1, so that β coefficients would represent a one SD difference in mental health score. A direct association was considered to be present if the β coefficient of the work-related satisfaction subscale remained significant after adjustment for the other subscales. A buffered association was considered to be present if the interaction term between a subscale of work-related satisfaction and of job stress was statistically significant. The final model was adjusted for significant socio-demographic and professional characteristics of mental health identified in the univariate analysis to account for confounding of these variables. Scatterplots and non-parametric regression lines (LOWESS) were used to display the association between job stress and mental health across different levels of work-related satisfaction. All statistical tests were two-tailed, with a significance level of 0.05.

Results

After two reminders, 1784 physicians (65%) responded to the survey. Physicians who participated were younger (50.8 vs. 52.5 years, $P < 0.001$), more often men (84% vs. 78%, $P < 0.001$) and board-certified generalists (45% vs. 26%, $P < 0.001$). General practitioners had a higher response rate (72%, $P < 0.001$) than general internists (55%), paediatricians (65%) and physicians without specialty qualification (41%).

Of the 1784 available questionnaires, 52 (3%) had to be excluded because of missing answers to the SF-12, leaving 1732 questionnaires for further analyses. The majority of respondents were men and in solo practice (table 1). Their mean age was 51 years (SD 7.8; quartiles: 45–51–56) and a minority lived alone. Half were board-certified generalists, 25% general internists and 9% pediatricians, internal medicine specialists or physicians without specialty qualification. The majority were living in the German-speaking region of the country ($n = 1241$, 72%), 24% in the French-speaking ($n = 423$), and 4% in the Italian-speaking ($n = 68$). They worked on average 51 h/week (SD 14; quartiles: 44–52–60). The respondents had overall low levels of emotional exhaustion (mean 17.9, SD 9.8; minimum 0, maximum 53) and depersonalization (mean 11.6, SD 8.5; minimum 0, maximum 48.6) and high levels of personal accomplishment (mean 44.5, SD 7.3; minimum 12.4, maximum 54) and work-related satisfaction [mean (SD): burden: 2.8 (0.8); personal rewards: 4.0 (0.6); income-prestige: 3.3 (0.9); patient care: 4.0 (0.6); professional relations: 3.9 (0.6); minimum 1, maximum 5 for all subscales].

Univariate analyses

Respondents had a mean physical health score of 54.5 (SD 6.0; quartiles: 53.2–56.3–57.8) and of mental health of 48.4 (SD 9.7; quartiles: 43.9–51.3–55.7). In bivariate analyses, lower physical health scores were reported by women, older physicians, physicians living alone and internal medicine specialists, whereas lower mental health scores were reported by physicians aged 36–55 years, living alone and working more hours per week (table 1).

With regard to associations with burnout and work-related satisfaction scores, worse physical health was associated with higher levels of emotional exhaustion and lower levels of satisfaction towards current income and social prestige, whereas worse mental health was associated with lower levels of all dimensions of work-related satisfaction, higher levels

of emotional exhaustion and depersonalization and lower levels of personal accomplishment.

Emotional exhaustion and depersonalization were negatively associated with all dimensions of work satisfaction (Pearson's coefficient range: -0.14 to -0.54), whereas personal accomplishment was positively associated (Pearson's coefficient range: 0.19 – 0.36).

Linear regression analyses

Direct associations

In single-factor linear regression analysis, all subscales of work-related satisfaction and job stress were significant predictors of mental health (table 2, simple models). When all work-related subscales were entered in the model, only the burden, personal rewards and income-prestige dimensions remained associated with mental health (table 2, Model 1). When all subscales of job stress were used, only emotional exhaustion and personal accomplishment remained associated with mental health (table 2, Model 2). When all subscales of work-related satisfaction and job stress were used as predictors, only higher levels of work-related satisfaction with income-prestige and professional relations remained associated with better mental health, supporting a direct association of these dimensions (table 2, Model 3).

Buffered associations

We further examined the association between emotional exhaustion and personal accomplishment and mental health graphically, stratifying on tertiles of significant dimensions of work-related satisfaction (income-prestige and professional relations). A nearly linear association between mental health and emotional exhaustion was observed at all levels of work-related satisfaction, with a steeper slope for lower levels of work-related satisfaction (figure 1). We tested this impression in a linear regression model including interactions terms and adjusted for significant socio-demographic and professional determinants. The interaction terms between emotional exhaustion and income-prestige and emotional exhaustion and professional relations were statistically significant, whereas none of terms including personal accomplishment reached the level of statistical significance (table 3, Model 4a and 4b). These results indicate that the negative impact of emotional exhaustion on mental health decreases at higher levels of work-related satisfaction for income-prestige and professional relations, a finding that supports a buffer effect. Altogether the factors included in the final model explained 45% of the total variance of mental health.

Discussion

In this study, we have found that higher levels of work-related satisfaction with current income, social prestige and professional relations were associated with better mental health in a large sample of Swiss primary care physicians. Beside this direct association, we have also found a significant 'buffering' of these dimensions of work-related satisfaction. Indeed, at higher levels of work-related satisfaction for current income, social prestige and professional relations, the negative effect of emotional exhaustion on mental health was weaker: when physicians are satisfied with their working conditions, they cope better with job stress and burnout. This 'buffering' effect, to our knowledge, has never been reported before, but only suggested in previous surveys of general practitioners^{8,20} and hospital consultants.^{6,7}

Table 1 Socio-demographic and work-related characteristics of physical and mental health among 1732 Swiss primary care physicians

	<i>n</i> (%)	Physical health score	<i>P</i> -value ^a	Mental health score	<i>P</i> -value ^a
Sex			<0.001		0.9
Male	1451 (83.8)	54.7		48.4	
Female	281 (16.2)	53.3		48.5	
Age (years)			<0.001		<0.001
<36	14 (0.8)	53.4		50.8	
36–45	465 (26.8)	55.0		48.4	
46–55	806 (46.5)	54.8		47.6	
56–65	388 (22.4)	53.7		49.5	
>65	59 (3.4)	51.8		52.2	
Living alone			0.04		0.02
Yes	116 (6.7)	53.4		46.5	
No	1616 (93.3)	54.6		48.6	
Medical specialty			0.03		0.14
General practitioner	824 (47.6)	54.6		48.7	
General internists	436 (25.2)	54.9		48.2	
Paediatricians	162 (9.4)	54.0		49.4	
Internal medicine specialists	147 (8.5)	53.9		48.0	
Physicians without specialty qualification	163 (9.4)	54.3		46.9	
Place of practice (five missing)			0.63		0.26
Urban	646 (37.3)	54.3		48.0	
Semi-urban	577 (33.3)	54.5		48.5	
Rural	504 (29.1)	54.7		48.9	
Type of practice (seven missing)			0.07		0.35
Solo	1093 (63.1)	54.3		48.6	
Group (including private clinic and medical centre)	632 (36.5)	54.9		48.1	
Estimated total work time per week (26 missing)			0.06		0.001 ^b
Lowest tertile (<47 h)	554 (32.5)	54.2		49.5	
Intermediate tertile (47–57 h)	575 (33.7)	55.0		48.3	
Highest tertile (>57 h)	577 (33.8)	54.2		47.5	
Satisfaction with work-related burden (17 missing)			0.06 ^b		<0.001 ^b
Lowest tertile (≤2.3)	520 (30.3)	53.9		43.9	
Intermediate tertile (2.4–3.0)	579 (33.8)	54.9		48.2	
Highest tertile (>3.0)	616 (35.9)	54.6		52.4	
Satisfaction with personal rewards (18 missing)			0.21 ^b		<0.001 ^b
Lowest tertile (≤3.7)	640 (37.3)	54.3		44.3	
Intermediate tertile (3.8–4.0)	437 (25.5)	54.5		49.3	
Highest tertile (>4.0)	638 (37.2)	54.7		52.0	
Satisfaction with income and prestige (28 missing)			<0.001 ^b		<0.001 ^b
Lowest tertile (≤2.7)	459 (26.9)	53.6		44.6	
Intermediate tertile (2.8–3.7)	688 (40.4)	54.5		48.2	
Highest tertile (>3.7)	557 (32.7)	55.1		51.6	
Satisfaction with patient care (21 missing)			0.63 ^b		<0.001 ^b
Lowest tertile (≤3.7)	526 (30.7)	54.7		45.2	
Intermediate tertile (3.8–4.3)	485 (28.3)	54.3		48.9	
Highest tertile (>4.3)	701 (40.9)	54.5		50.4	
Satisfaction with professional relations (20 missing)			0.10 ^b		<0.001 ^b
Lowest tertile (≤3.7)	732 (42.8)	54.3		46.4	
Intermediate tertile (3.8–4.0)	387 (22.6)	54.6		48.5	
Highest tertile (>4.0)	590 (34.5)	54.8		50.8	
Emotional exhaustion (seven missing)			0.001 ^b		<0.001 ^b
Lowest tertile (≤12)	589 (34.1)	55.0		54.0	
Intermediate tertile (12.1–21)	576 (33.4)	54.6		49.6	
Highest tertile (≥21)	560 (32.5)	53.8		41.3	
Depersonalisation (12 missing)			0.12 ^b		<0.001 ^b
Lowest tertile (≤6.8)	531 (30.9)	54.3		51.5	
Intermediate tertile (6.9–12.6)	637 (37.0)	54.4		48.9	
Highest tertile (>12.6)	552 (32.1)	54.8		44.8	
Personal accomplishment (13 missing)			0.06 ^b		<0.001 ^b
Lowest tertile (≤42.4)	562 (32.4)	54.1		44.4	
Intermediate tertile (42.3–48.4)	598 (34.5)	54.6		48.3	
Highest tertile (>48.4)	559 (32.3)	54.8		52.5	

a: ANOVA, differences between groups

b: ANOVA, test for linear trend

A better understanding of what can affect physicians' health is important for health authorities, medical associations and medical schools, because of its potential consequences on the health care system. The primary care workforce is an essential partner for the universal access of quality and efficient care for the population and for any effective prevention, vaccination or surveillance programme, activities considered as traditional

public health activities. Classically medical activity has been considered as belonging to the 'high-prestige occupations' characterized by high incomes and high-psyche rewards. Such characteristics have been considered for a long time as sufficient to protect physicians against the risk of professional exhaustion. Indeed being a workaholic, having high levels of empathy and desire for social standing are characteristics

Table 2 Direct associations of work-related satisfaction and job stress (MBI) with mental health (SF-12) among 1732 Swiss primary care physicians

	Work-related satisfaction					Job stress		
	Burden β	Personal rewards β	Income-prestige β	Patient care β	Professional relations β	Emotional exhaustion β	Depersonalization β	Personal accomplishment β
Single-factor models	3.8**	—	—	—	—	—	—	—
	—	3.8**	—	—	—	—	—	—
	—	—	3.0**	—	—	—	—	—
	—	—	—	2.4**	—	—	—	—
	—	—	—	—	2.3**	—	—	—
	—	—	—	—	—	-6.0**	—	—
	—	—	—	—	—	—	-3.3**	—
	—	—	—	—	—	—	—	3.4**
Multiple-factor models								
Model 1	2.3**	2.2**	1.1**	0.1	0.4	—	—	—
Model 2	—	—	—	—	—	-5.5**	-0.05	1.9**
Model 3	0.3	0.2	1.0**	0.03	0.5*	-4.9**	-0.07	1.7**

Differences in standardized mental health scores (β) were obtained by linear regression models and represent a one SD difference in the other scales

* $P < 0.05$, ** $P < 0.001$

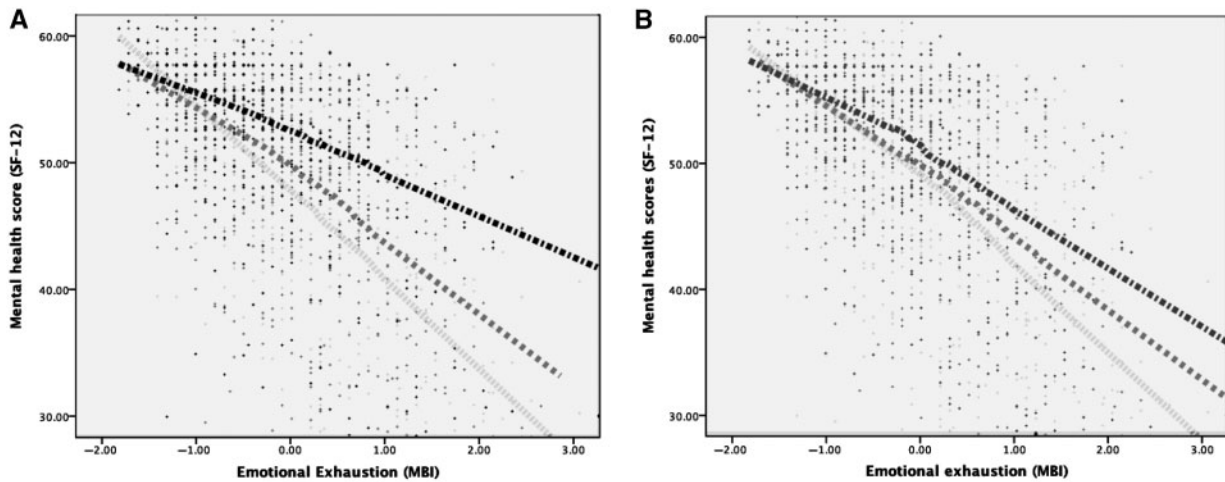


Figure 1 Relationship between mental health (SF-12) and emotional exhaustion (MBI) across different levels (black dotted line: highest tertile; grey dotted line: intermediate tertile; light grey dotted line: lowest tertile) of work-related satisfaction (A: income-prestige; B: professional relations), among 1732 Swiss primary care physicians. Lines represent non-parametric regression estimates (LOWESS)

Table 3 'Buffering' of the relationship between work-related satisfaction and mental health scores (SF-12) at higher levels of job stress (MBI)

	Work-related satisfaction		Job stress		Interaction terms			
	Income and prestige (IP) β	Professional relations (PR) β	Emotional exhaustion (EE) β	Personal accomplishment (PA) β	IP * EE β	PR * EE β	IP * PA β	PR * PA β
Model 4a	1.04**	0.57*	-4.99**	1.71**	0.55*	0.41*	-0.11	0.11
Model 4b	1.04**	0.57*	-4.98**	1.72**	0.58**	0.38*	—	—

Differences (β) in standardized mental health scores were obtained by linear regression models and correspond to a one SD difference in the other scales; both models were adjusted for age, living alone and workload [self-reported total work time (h) per week]

* $P < 0.05$, ** $P < 0.001$

associated with the choice of medicine as a career, but also makes doctors vulnerable to emotional ill-health.^{31,32} The ability to influence his own happiness through personal values and choices and control of the work environment may be

useful for the prevention of physician burnout and could be taught early to future primary care physicians.

However changes in the working environment, such as those resulting from healthcare reforms, are much more potent

to affect physicians' health. Numerous reports of physician's dissatisfaction and unhappiness around the world^{33–38} have been related to increased workload and reduced income and clinical autonomy after changes in health care systems.^{37,39} This tendency was considered as the rule, in relation with the degrading working conditions of primary care in several countries until recently. Indeed the introduction of the new general medical services contract in the UK in April 2004 resulted in a significant increase of job satisfaction of general practitioners regarding their income and workload, despite isolated reports of negative consequences for workload and autonomy.⁴⁰ These findings are really encouraging and should lead the way to a different approach of reforms that can affect the delivery of primary care.

Limitations and strengths

Our study has several limitations. First, as a cross-sectional survey, it precludes evaluation of temporality and causality of the observed relationships. Poorer mental health could also contribute to increased emotional exhaustion, decreased sense of personal accomplishment or lower self-reported work satisfaction. Another limitation is the exclusive reliance on self-reported rating scales, which raises the issue of measurement error, related to systematic positive or negative response tendencies. A third limitation is the issue of collinearity, as we studied eight possible determinants of mental health in our analyses. The main problem with collinearity is that when two explanatory variables are highly correlated, it may be difficult to evaluate their individual effects in a multivariate model. As a consequence, whilst each variable may be significantly associated with the dependent variable in a univariate model, neither may be significant when they are included in a multivariate model. In this article, we were interested in finding which dimensions of work-related satisfaction were the most important. Therefore, we adopted a conservative approach and retained only significant factors before testing the interactions terms. We were also concerned that 'personal accomplishment' may have a similar effect. Therefore we replicated all the analyses without this factor and found similar results (Tables available at *EURPUB* Online).

Among its strength, these results were obtained from a large random sample of primary care practitioners. The participation rate was excellent (65%), given that surveys among physicians rarely exceed 50% of response rate. To estimate the size and direction of participation bias on burnout levels, we computed a propensity score to participate to the survey based on sex, age, linguistic region, number of years of practice and medical specialty and correlated this score with the probability to present a moderate or high degree of burnout, based on the same set of predictors. A positive association was found, suggesting that participants were more likely to report a moderate or high degree of burnout. Based on this set of predictors, the predicted probability of burnout among non-participants differed by <1%.⁹ Non-response bias can be a major problem in prevalence survey, but it is by far less important when relationships between different factors among a representative sample are studied. Therefore, although we cannot completely exclude this type of bias, we believe that the relationships presented in this article represent a good estimate of the true associations between emotional exhaustion, work-related satisfaction and mental health.

Conclusions

Among a large sample of Swiss primary care physicians, we identified dimensions of work-related satisfaction that were associated with better mental health. Higher levels of

work-related satisfaction with current income, social prestige and professional relations were independent correlates of better mental health. These dimensions of work-related satisfaction also 'buffered' the association of emotional exhaustion on physician's mental health. In an era of continuing and increasing economic constraints, further longitudinal research are needed to study how ongoing reforms in the Swiss healthcare system will affect the primary care workforce and physicians' health in the future. Further decrease in work-related satisfaction may intensify the effect of job stress and further decline of physicians' morale.

Supplementary Data

Supplementary data are available at *EURPUB* online.

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Key points

- Work-related satisfaction and job stress-related health problems, such as burnout, are important determinants of quality of care, because of their influence on physicians' functioning. However, their roles as determinants of doctors' mental health is still poorly understood.
- Indeed work-related satisfaction could have an independent beneficial effect on mental health (direct association) or simply reduce the impact of work stress on mental health (moderating or 'buffering' role).
- In this cross-sectional survey of 1732 Swiss primary care physicians, higher levels of work-related satisfaction with current income, social prestige and professional relations were associated with better mental health. Higher levels of these dimensions of work-related satisfaction also 'buffered' the relationship of emotional exhaustion on physician's mental health.
- Further decrease in work-related satisfaction may intensify the effect of job stress and further decline of physicians' morale.

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