

Work-related Behavior and Experience Patterns and Predictors of Mental Health in German Physicians in Medical Practice

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Background and Objectives: *Work-related stress and burnout among physicians are of increasing relevance. The aim of this study was to investigate work-related behavior and experience patterns and predictors of mental health of physicians working in medical practice in Germany.* **Methods:** *We surveyed a stratified, random sample of 900 physicians from different specialties. The questionnaire included the standardized instruments Work-related Behavior and Experience Pattern (AVEM) and the Short Form-12 Health Survey (SF-12).* **Results:** *Only one third of physicians reported high or very high general satisfaction with their job, but 64% would choose to study medicine again. Only 18% of physicians presented a healthy behavior and experience pattern. Almost 40% presented a pattern of reduced motivation to work, 21% were at risk of overexertion, and 22% at risk for burnout. Willingness to study medicine again, fulfilled job expectations, professional years, marital status, and behavior patterns were significant predictors of mental health and accounted for 35.6% of the variance in mental health scores. Job-related perceptions also had a significant effect on burnout.* **Conclusions:** *The strong influence of work-related perceptions suggests a need for realistic expectation management in medical education, as well as support in stress management and coping strategies during medical training.*

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Psychosocial symptoms and impairment are potential consequences of a demanding professional work life among physicians.¹ International rates of burnout among physicians vary between 25% and 76%.²⁻⁴ Among US physicians in private practice, burnout rates of more than 60% have been reported.⁵ Resident physicians also report high levels of burnout.⁶⁻⁷ In several studies, male physicians in medical practice were more likely than female physicians to report burnout or depressive symptoms.^{3,8-10}

Unfavorable working conditions such as long work hours, high workload, patient expectations, or administration duties contribute to physicians' stress and potential burnout.^{3,10-11} Voltmer et al examined work-related behavior and experience patterns in physicians working in hospitals in Germany and found that only a small fraction had a healthy behavior and experience pattern, while almost one third presented a pattern at risk for burnout.¹² German data about rates of burnout in medical practice are inconsistent and range from as low as 5% to as high as 54%.¹³⁻¹⁵ Personality as well as individual perceptions, work satisfaction, and coping styles also play an important role in the genesis of burnout and impairment.¹⁶⁻¹⁸

Since many studies on physician stress focus on clinical pathology and impairment of physicians and far fewer on health and well-being,⁵ we were interested in exploring stress and risk factors in the context of mental and physical health, individual perceptions, and health

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resources. In this study, we examined work-related characteristics, perceptions, behavior and experience patterns, and mental health in physicians working in private practice. We hypothesized that, compared to reference samples, physicians in medical practice would present with better self-reported physical health but poorer mental health (indicated by lower mental health scores and a lower prevalence of a healthy and higher prevalence of a burnout-related behavior and experience pattern). We also hypothesized that female physicians would have a more favorable distribution of patterns than male physicians.

Methods

Participants

In this cross-sectional study, a survey was mailed to 900 physicians working in medical practices, randomly selected from a list of 3,935 physicians enrolled in the Medical Association of Schleswig-Holstein. The sample was stratified by discipline (general practitioners, medical specialists, or surgical specialists). Reminders were sent after 4 and 8 weeks. The study was approved by the ethical committee of the University of Freiburg.

Measures

In addition to demographic questions, job-related perceptions were assessed with three items (job satisfaction, fulfilled job expectancies, and willingness to study medicine again) with response options presented on a 5-point Likert scale. Workload was assessed by self-reported patients per quarter and total working time per week using an open-ended question. The questionnaire also included two standard inventories: the questionnaire Work-related Behavior and Experience Patterns (AVEM) and the Short Form-12 Health Survey (SF-12).

AVEM

For the evaluation of job-related risks and health resources, we built on a theoretical and methodological framework developed by Schaarschmidt and Fischer.¹⁹ The AVEM collects self-reported data about personal experiences with work-related stress and typical coping behaviors. The instrument covers three major domains: (1) professional commitment, (2) resistance toward stress,

and (3) emotional well-being (in the context of work), which are assessed with 11 separate scales. Each scale comprises six items with response options presented as a 5-point Likert scale ranging from 1 ("I strongly disagree") to 5 ("I strongly agree"). A cluster analysis of the initial AVEM sample group comprised of 1,598 representatives from different professions revealed a four-cluster solution (the healthy type G, the unambitious type S, the overexerted risk type A, and the resigned, burnout-related risk type B (Table 1)).¹⁹ The validity of the instrument was supported by moderate to good correlations with scales that measured related constructs (eg, Freiburg Personal Inventory (FPI), Maslach Burnout Inventory (MBI), and the Big-Five Adjective List). Scale reliability was assessed in samples of different professions. The median Cronbach's α was 0.81 (minimum: 0.79, maximum: 0.86).¹⁹

SF-12

The SF-12 is a short form developed from the original SF-36 Health Survey. The SF-36 comprises eight scales (physical functioning, role limitations due to physical and emotional health problems, physical pain, general health perception, vitality, social functioning, and mental health). The SF-12 is comprised of one or two items of each of the original eight scales. A summary score of physical and mental health is calculated with scoring algorithms for all items. The calculated summary scores of the SF-12 account for more than 90% of the variance of the SF-36 results.²⁰

Table 1

Description of Four Types of Work-related Behavior and Experience Patterns

Pattern G: "Health"	This pattern represents a healthy attitude toward work. The individuals are ambitious at work but also able to maintain emotional distance from work. They score high in dimensions that represent resistance to stress and in all dimensions related to positive emotions.
Pattern S: "Unambitious"	Characteristic for this pattern is a rather unambitious attitude toward work, with the lowest scores in dimensions describing commitment to work and highest scores in capacity for detachment. Nevertheless, scores of the dimensions of emotional well-being suggest a generally positive experience with life. The challenge of this pattern is less in health than in promoting motivation.
Risk pattern A: "Overexertion"	This pattern is characterized by excessive commitment to work and difficulties in emotional distancing from work. Impaired coping mechanisms in stressful situations and negative emotions also characterize this exhausting pattern.
Risk pattern B: "Burnout"	Individuals with this pattern show low scores on the dimensions related to professional commitment. They attain high scores on tendencies to resignation and correspondingly low scores on emotional distancing and active coping. Their emotional status is characterized by low scores on balance and mental stability, satisfaction with work, and satisfaction with life and show limited experience of social support. This pattern represents the core symptoms of burnout.

The SF-12 has proven to be a psychometrically robust and feasible instrument for use in outcome evaluation of functional health in various countries and populations.^{21,22} To keep international comparability, the weights were calculated according to the North American reference standard.

A significant overlap of items/scales of the SF-12 and the AVEM has not been reported before. In our results, a Pearson correlation coefficient of 0.03 to 0.55 between the mental health score and the 11 AVEM dimensions was observed with a mean of $r=0.31$ (based on Fisher's Z transformed correlation coefficients).

Data Analysis

Data analyses were conducted with SPSS for Windows Version 15.0 (SPSS Inc, Chicago). We report univariate statistics as means and standard deviations for continuous variables and percentages for categorical variables. For categorical variables, data were analyzed using χ^2 tests. For continuous variables, data were analyzed using two tailed t tests and analyses of variance in a general linear model. Analyses of variance were adjusted for age. We used regression analysis as our analytical model to explore the relationship between sociodemographic factors, working conditions, or work-related perceptions (independent variables) on physicians' mental health or burnout (dependent variables). The influence of the independent variables on the physicians' mental health were analysed with stepwise linear regression models with cut-off scores of $P<.05$ for inclusion and $P>.10$ for exclusion. To identify effects on the burnout-related risk type B, in a multinomial regression analysis we used the (risk) types as a dependent variable with the healthy type G serving as a reference and examined the effects of mental and physical health scores and the other above mentioned independent variables on this outcome variable.

Results

Sample Description, Job Characteristics, and Job Satisfaction

The response rate after two reminders was 61% ($n=549$). There was no difference between respon-

dents and nonrespondents in terms of age and medical discipline, but female physicians were more likely to respond compared to male physicians (68% versus 56%, $P<.01$).

The sample consisted of 64% male and 36% female physicians. About half of the physicians were working in a single practice and 45% in a group practice. Most (86.8%) of the physicians were married or living in a stable partnership. Male respondents were significantly more likely to be married than were female respondents (89.4% compared to 82.0%, $P<.05$). Almost all the physicians (97%) were German. Table 2 reports other sample characteristics of respondents.

One quarter of the physicians worked more than 60 hours per week and had more than 1,500 patient contacts per quarter. Female physicians were significantly less likely than males to work full-time (64.5% compared to 89.3%, $P<.001$) and reported, on average, fewer working hours per week (41.82 (SD=12.21) compared to 51.44 (SD=12.97), $P<.001$).

About one third of the physicians rated their general job satisfaction as high or very high. About 50% reported that their job expectations were fulfilled to a high or very high degree. Further, 65% reported they would study medicine again, though 18% said they would not.

Behavior and Experience Patterns

The largest proportion of physicians (40%) presented the pattern S (unambitious). Only 18% (versus 26% in a reference sample from different professions) reported a healthy pattern G, and 22% (versus 20%) presented a B pattern (at risk for burnout).

Male and female physicians differed significantly in behavior and experience patterns ($P<.05$). Women were more likely to present the healthy pattern G, as well as the pattern A (overexertion) than their male colleagues (Figure 1).

Health Relevant Dimensions

Physicians showed medium scores in the domains of professional ambition and resistance to stress and medium to high scores in the domain of emotional well-

Table 2

Sample Characteristics of Physicians in Medical Practices

Characteristics	Mean	SD	Groups (%)				
			<40 (6.4)	40–49 (35.3)	50–59 (40.4)	>60 (17.9)	
Age	51.7	8.0	<10 (3.1)	10–19 (31.9)	20–29 (37.0)	>30 (27.9)	
Professional years	23.4	8.0	<40 (19.4)	40–49 (27.1)	50–59 (29.0)	>60 (24.5)	
Working hours/week	48.1	13.3	<500 (14.3)	500–999 (24.3)	1,000–1,499 (35.7)	1,500–1,999 (13.3)	>2,000 (12.4)

being. Female physicians had significantly higher scores than their male colleagues in the subjective significance of work, tendency to exert, striving for perfection, satisfaction with work and life, and experience of social support. However, they had lower scores on mental balance and stability. After adjusting for age, differences in the dimensions balance and mental stability

and satisfaction with work were no longer significant (Figure 2, $P < .001$).

Self-reported Physical and Mental Health

Compared to the total German and to gender-specific reference samples, the physical summary health score of physicians assessed with the SF-12 was significantly higher, and the mental health score was significantly lower (the differences between German and US reference scores in physical (49.6, SD=8.7 versus 50.8, SD=8.9) and mental summary health scores (52.3, SD=8.0 versus 50.0, SD=9.5) are small).²³ There were no significant differences in physical or mental health scores between gender and speciality groups of physicians (Table 3).

In stepwise regression analysis, willingness to study medicine again, fulfilled job expectations, years in professional practice, marital status, and behavior patterns accounted for 35.6% of the variance in mental health scores (Table 4). Gender, general job satisfaction, patient per quarter, working time per week, and part-time/full-time work did not account for additional variance.

Figure 1

Work-related Behavior and Experience Patterns of Physicians in Medical Practices

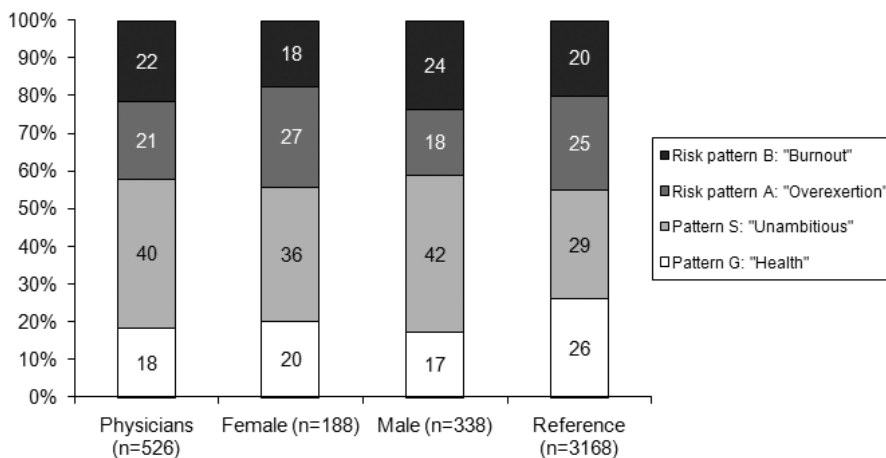
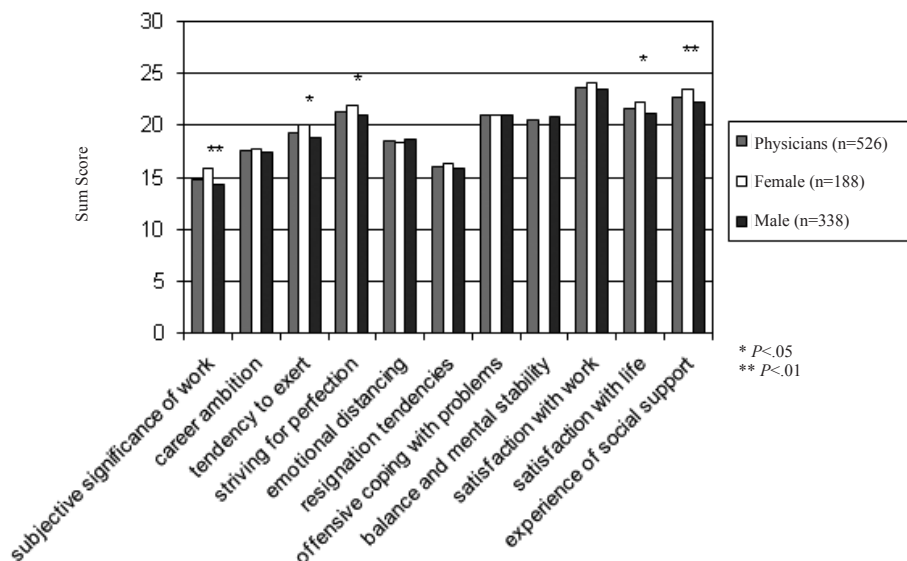


Figure 2

Health-relevant Dimensions (AVEM) of Physicians in Medical Practices and Differences Between Male and Female Physicians (Adjusted for Age)



Work-related Behavior and Experience Patterns in Relation to Working Conditions, Job-related Perceptions, and Physical and Mental Health

In a multinomial regression analysis, job-related perceptions (willingness to study medicine again ($P = .01$), fulfilled job expectations, $P < .001$) and physical ($P < .05$) and mental health scores ($P < .001$) had a significant effect on risk type B (at risk for burn-out) compared to healthy type G, whereas age, gender, and working time had no effect.

Table 3

Physical and Mental Summary Health Scores of Physicians Working in Medical Practices, Compared to Norm Samples (Higher Scores Indicate Higher Physical or Mental Health)

	Physical Health Score				Mental Health Score			
	Physicians	Norm Sample	P Value	d	Physicians	Norm Sample	P Value	d
	Mean (SD)				Mean (SD)			
Total (n=510/2805)	51.26 (7.53)	49.03 (9.35)	<.001	.26	48.26 (10.06)	52.24 (8.10)	<.001	-.44
Male (n=325/1254)	51.55 (7.37)	50.22 (8.68)	.001	.17	47.77 (10.54)	53.25 (7.57)	<.001	-.59
Female (n=181/1551)	50.75 (7.86)	47.93 (9.74)	<.001	.32	49.08 (9.15)	51.30 (8.41)	.001	-.25

SD—standard deviation

Table 4

Stepwise Regression Analysis: Variables Predicting Self-reported Mental Health

Step	Predictor Variable	β	t	P Value	Corrected Cumulative r^2
1	Study medicine again (5-point Likert scale)	.203	4.512	<.001	.171
2	Fulfilled job expectations (5-point Likert scale)	.144	3.127	.002	.219
3	Number of professional years	.082	2.132	.034	.226
4	Marital status (single versus married/cohabiting)	-.069	-1.797	.073	.233
5	Behavior patterns on AVEM) relation to base pattern G (health)				.356
	Risk Type S (unambitious)	.004	.073	.942	
	Risk type A (overexertion)	-.228	-4.439	<.001	
	Risk type B (burnout)	-.385	-6.978	<.001	

Table 5 presents the differences between the behavior and experience patterns for physical and mental health, job-related perceptions, and working conditions. Physicians with risk pattern A (overexertion) reported significantly higher scores of working hours per week compared to those with pattern S ($P < .01$). Physicians with healthy pattern G also differed significantly in terms of higher mental health scores compared to those with risk pattern A (overexertion) and B (burnout) ($P < .01$). All patterns differed significantly ($P < .01$) in terms of fulfilled job expectations and willingness to study medicine again with highest scores for physicians presenting the healthy pattern G and lowest for those with risk burnout pattern B.

Discussion

Only one third of physicians surveyed here reported high or very high general satisfaction with their job. While the physical health score of the physicians was higher than in reference samples, the mental health score was lower. Only 18% of physicians presented a healthy behavior and experience pattern. Almost 40% presented a pattern of reduced motivation to work, 21% were at risk of overexertion, and 22% at risk for

burnout. Job-related perception had a strong influence on mental health.

As hypothesized, compared to reference samples, the physical health score of physicians surveyed here was higher. Prior US research has shown that physicians' health habits are better than the general population and also better than others of high socioeconomic status.²⁴ This is consequential, because physicians with healthier habits are more likely to counsel their patients about related prevention practices.²⁴

However, the risk for completed suicide in physicians (especially among women physicians) is higher than in the general population.^{1,25,26} The expected lower mental health score of the physicians might help explain this elevated risk. While the mean mental health score of the total study group was less than a standard deviation from the population norm and different from that typically seen in samples of depressed individuals, the mental health score of physicians with the burnout-related risk type B was lowest of all patterns and was lower (40) than the cut-off score (42) used for detecting patients diagnosed with depressive disorder²⁷ and only slightly higher than that (37) of a sample of psychiatric patients with depressive disorders or current symptoms.^{20,28}

Table 5

Differences of Work-related Behavior Patterns in Physical and Mental Health Scores, Job-related Perceptions, and Working Conditions

	<i>Pattern G (Health)</i>	<i>Pattern S (Unambitious)</i>	<i>Risk Pattern A (Overexertion)</i>	<i>Risk Pattern B (Burnout)</i>	<i>P Value</i>
	<i>Mean (Standard Deviation)</i>				
Physical health	53.63 (5.29)	51.91 (6.91)	48.45 (9.57)	50.89 (7.15)	>.001; G-A, S-A*
Mental health	53.33 (7.49)	52.16 (7.49)	45.44 (8.89)	40.29 (11.13)	>.001; G-A, G-B, S-A, S-B
General job satisfaction	3.06 (.95)	3.17 (.97)	2.97 (.93)	3.06 (.93)	.357
Fulfilled job expectations	3.94 (.75)	3.60 (.85)	3.17 (.96)	2.81 (.97)	>.001; G-S, G-A, G-B, S-A, S-B, A-B
Study medicine again	4.34 (.86)	3.96 (1.11)	3.72 (1.13)	3.04 (1.17)	>.001; G-S, G-A, G-B, S-B, A-B
Working hours/week	48.03 (13.69)	45.40 (12.61)	51.57 (14.66)	49.23 (11.54)	=.001; S-A
Patients/quarter	1,214 (630)	1,092 (714)	1,261 (777)	1,202 (975)	.280
Professional years	23.38 (8.51)	23.71 (8.41)	22.89 (8.42)	23.11 (7.74)	.841
Age	50.53 (8.13)	52.27 (8.12)	50.90 (7.92)	51.72 (7.69)	.256

* Indicates a significant difference between pattern G or S and risk pattern A.

Our results emphasize the influence of work-related perceptions on mental health or burnout. In regression analysis, the willingness to study medicine again or fulfilled job expectations, but not total working time or patients per quarter, accounted for a substantial part of the variance in predicting mental health. Likewise the work-related perceptions as well as mental and physical health scores had significant effects on the burnout-related risk (pattern B). This is in line with other studies,^{29,30} which suggest that emotional demands, physicians' expectations, and the interplay with other relevant factors such as conflicts or low social support, are more detrimental to physicians' well-being than total working time.

The largest fraction of physicians presented with an unambitious pattern (S). The reported complaints of physicians about an increasingly large workload, administrative work, and financial or administrative restrictions may reflect a state of inner resignation caused by the perceived imbalance between effort and reward and high levels of overcommitment and exterior control.

Women differed significantly from men, particularly in their risk patterns. They were more likely than men to report patterns of overexertion and less likely than men to report burnout. It has been a point of discussion that women are more likely to work part-time and that this may be related to better reported well-being and mental health than men.³¹ In our results a higher percentage of female physicians worked part-time, but this was not predictive for the variance of mental health scores.

The low percentage of physicians in our sample reporting a healthy behavior pattern raises the question about preventive strategies. Fostering self-awareness

and self-care and accepting personal vulnerability and the risk of job-related impairment is a reasonable first step.³² A cognitive behavioral stress management training program improved GPs' quality of work life and morale while their work-related and general psychological distress decreased.³³ Participation in Balint or peer groups has also been described as effective in enabling physicians to cope and find joy and challenge in their relationships with patients.^{34,35} Social support of colleagues, family, and friends has been shown to be beneficial against stress and burnout, especially for women.^{10,36,37}

In addition, contextual factors like professional autonomy and control,³⁸⁻⁴⁰ decreasing the administrative burden and improving practice supports,⁴¹ or providing models of low threshold support for physicians in need should be addressed.^{42,43}

Limitations

Although the response rate was satisfactory, and there were no significant differences in age or specialty between respondents and nonrespondents, the risk of selection bias cannot be ruled out. Because the data for the mailing were drawn from the Medical Association of Schleswig-Holstein, the reported results may not be representative of all physicians in Germany or physicians outside the German medical system. Further, the high variability in the reported numbers of patient contacts per quarter might reflect specialists, who see a lot of patients in a shorter time than general practitioners. Finally, although the survey was anonymous, we cannot rule out some biased responses (eg, respondents wanting to look mentally healthy).

Conclusions

Our data indicate that physicians working in medical practice report better physical health but experience a substantial psychosocial health risk. Work-related perceptions and behavior patterns were important predictors of mental health and burnout. Since job stress and burn-out have been linked to poor physician mental health and substandard patient care,^{42,44} strategies for effectively coping with stress and professional problems should be integrated in medical training.

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