ORIGINAL ARTICLE

The Implications of Psychological Symptoms for Length of Sick Leave

Burnout, Depression, and Anxiety as Predictors in a Primary Care Setting

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SUMMARY

Background: In this cross-sectional study, we aimed to determine the relation between sick leave duration, burnout symptoms, depression, anxiety, and somatization in a primary care setting.

Methods: Patients receiving a sickness certificate in one of 14 participating primary care practices were consecutively asked by their primary care physician to fill in a questionnaire comprising the Maslach Burnout Inventory—General Survey (MBI-GS) and the Patient Health Questionnaire (PHQ) containing the depression (PHQ-9), somatization (PHQ-15), and anxiety (GAD-7) scales. The main diagnosis on the sickness certificate was documented by the issuing physician. A quasi-Poisson regression analysis was performed to estimate the influence of burnout symptoms, depression, and anxiety on length of sick leave.

Results: 225 patients participated, 122 (54.2%) were female; the mean age was 39.5 years. Length of sick leave correlated with emotional exhaustion (p = 0.005), depersonalization (p = 0.013), depression (p = 0.006), anxiety (p = 0.023), and somatization (p = 0.001). However, regression analysis revealed that the only predictors for length of sick leave were anxiety (exp[0.081] = 1.084; p = 0.013), age (exp[0.017] = 1.017; p = 0.041) and education (exp[- 0.508] = 0.602; p = 0:029). The pseudo R^2 of the model was 0.25.

Conclusion: The impact of anxiety on burnout symptoms and sick leave days might have been underestimated so far. A holistic approach in patient centered communication should comprise the evaluation of psychosomatic comorbidity under consideration of the established concepts of depression and anxiety disorder to ensure adequate diagnostic and therapeutic management.

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Increasing job-related stress levels are recognized worldwide (1). Continuous work strain leads to emotional exhaustion, physical fatigue and cognitive weariness, which is attributed to burnout symptoms (2, 3). The impact of occupational stress on physicians and other social professions has been investigated in a large amount of surveys (4–9). However, to the best of our knowledge, there are no studies relating to the management of patients with burnout syndrome in primary care. Burnout is conceptualized as a multidimensional stress syndrome that comprises reduction of physical and emotional energies (2). The concept of burnout is not without drawbacks, however, as there is some significant overlap with depressive disorders (1, 10, 11) and an association with anxiety concepts (12, 13). Therefore the diagnosis "burnout" is not included in DSM V and ICD-11 due to some lack of clarification.

Nevertheless, physicians increasingly document the diagnosis burnout (ICD-10 code Z73) when patients present with somatic or psychosomatic complaints related to job stress (14). A recent representative German survey (DEGS) showed that 1.5% of the more than 15 000 interviewed participants suffered from burnout symptoms within the preceding 12 months (15). Therapeutic options are life style changes, such as stress reduction and re-establishing work–life balance, which are recommended for milder forms, whereas psychotherapeutic or psychopharmacological interventions might be necessary for more severe stages (11). Beyond that, it has recently been shown that a multi-faceted program with a combination of stress management, physical training, stress relief training, and mudpack therapy was effective in reducing burnout symptoms (16).

Burnout is often accompanied by somatic symptoms such as musculoskeletal pain, headache, gastrointestinal or airway diseases, which are all frequent reasons for encounter in primary care. Also, since these symptoms are often associated with increased psychosomatic co-morbidity, they lead to increased health care utilization (17). For Germany as much as for other countries, it is unclear to which extent burnout symptoms are the reason for sick leaves among primary care patients.

TABLE 1

Patient characteristics

	n	Number of sick days mean (SD)	Emotional exhaustion (MBI) mean (SD)	Depersonali- zation (MBI) mean (SD)	Personal accomplishment (MBI) mean (SD)	Depression (PHQ) mean (SD)	Anxiety (GAD-7) mean (SD)	Somati- zation (PHQ) mean SD)
All patients	225	7.3 (13.4)	3.5 (1.1)	2.8 (1.1)	4.9 (0.7)	6.7 (4.6)	5.6 (4.6)	12.9 (5.8)
Sex								
Female	122	6.9 (13.2)	3.5 (1.1)	2.6 (1.1)	5.0 (0.6)	6.5 (4.4)	6.0 (4.7)	9.6 (4.9)
Male	103	7.7 (13.7)	3.5 (1.0)	3.0 (1.1)	4.9 (0.7)	6.9 (4.8)	5.0 (4.4)	16.8 (4.2)
p-value		0.103	0.627	0.046	0.416	0.516	0.110	<0.001
Living with a partner								
Yes	162	7.8 (15.0)	3.5 (1.1)	2.8 (1.1)	4.9 (0.6)	6.6 (4.4)	5.6 (4.6)	15.8 (5.7)
No	61	6.0 (8.1)	3.5 (1.0)	2.9 (1.2)	5.0 (0.7)	6.9 (5.0)	5.4 (4.8)	13.1 (6.2)
p-value		0.860	0.902	0.539	0.475	0.715	0.608	0.770
Education								
≥ 10 years	74	5.1 (5.3)	3.5 (1.0)	2.7 (1.1)	5.0 (0.6)	6.4 (4.4)	6.4 (5.0)	12.5 (5.7)
≤ 10 years	149	8.4 (15.9)	3.5 (1.1)	2.8 (1.2)	4.9 (0.7)	6.8 (4.7)	5.2 (4.4)	13.1 (5.9)
p-value		0.046	0.680	0.485	0.295	0.743	0.054	0.673

SD, standard deviation; MBI, Maslach Burnout Inventory; PHQ, Patient Health Questionnaire; GAD-7, 7-item Generalized Anxiety Disorder Scale
Mean differences were calculated using the Mann–Whitney U test

Our hypothesis was that length of sick leave correlates with the extent of burnout symptoms, even in patients receiving sickness certificates for purely physical complaints such as lower back pain or the common cold. Accordingly, the aim of this study was to determine the relation between length of sick leave and burnout symptoms; and to compare the explanatory power of the Maslach Burnout Inventory—General Survey Questionnaire (MBI-GS) (18) with the established psychometric scales of the Patient Health Questionnaire (PHQ), namely the depression and anxiety scales (19–21). Moreover, we investigated to which extent the primary care physicians explored work-place related stress factors during patient evaluation. Our hypothesis was that most of the patients experience a conversation about psychological strain related to their job as helpful.

Methods

Setting and patients

A total of 14 general practices with 16 primary care physicians in urban, suburban, and rural regions of Bavaria in Southern Germany participated in this cross-sectional multi-center study between September 2012 and February 2013. Patients with an employment contract who received a sickness certificate were consecutively asked by their primary care physicians to fill in a questionnaire. Patients younger than 18 years or with poor German language skills were excluded. Sex, age, length of sick leave, and the diagnosis on the sickness certificate were documented for all patients including non-responders by their physician. The aim was to include 220 patients (power calculation: see *eBox*). The study was approved by the Medical Ethics Committee of the Technische Universität München / Klinikum rechts der Isar.

Questionnaires

The participating primary care physicians were asked to document in a structured questionnaire the current diagnosis on the sickness certificate and the length of sick leave. Additionally, patients documented in a structured questionnaire, if the primary care physician asked about chronic exhaustion, lower productivity and reduced mood; and whether this was helpful for them. Age, sex, marital status, educational level, and working hours per week were also documented.

Burnout dimensions were assessed using the German version of the "Maslach Burnout Inventory—General Survey" (MBI-GS) (17). The MBI questionnaire was originally developed to measure burnout in health professionals and social workers. However, the field of application has been extended to all kinds of jobs, and the MBI-GS has therefore been adapted as a General Survey questionnaire to enable generalization. The MBI-GS consists of three subscales:
- Emotional exhaustion (5 items),
- Depersonalization (5 items) and
- Personal accomplishment (6 items).

The range of the scale is from 1 (lowest impairment) to 6 (highest impairment).
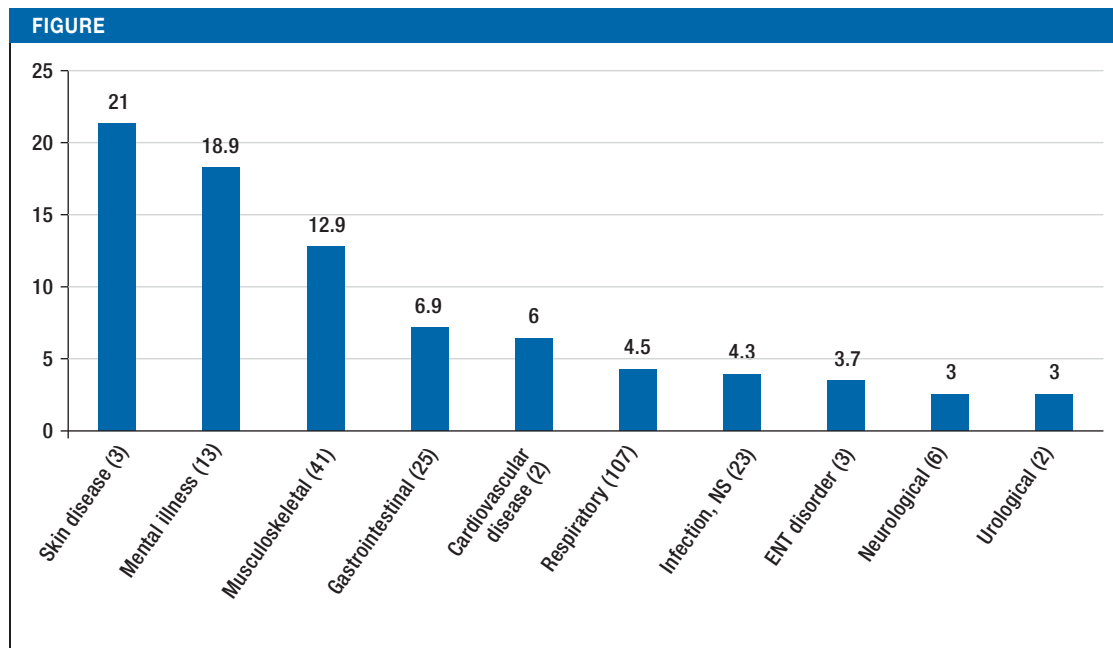
FIGURE

We used three subscales of the German version of the Patient Health Questionnaire (PHQ) to assess depression (19), anxiety (20, 21), and somatization (22). The depression severity score of the PHQ, the PHQ-9, comprises nine items which can be summarized. The range is from 0 (no depression) to 27 (maximal depression). Based on a standard interview for assessing psychiatric disorders, the PHQ was shown to have superior criterion validity compared to other established self-report questionnaires with respect to the diagnoses "major depressive disorder" and "other depressive disorders" (19). The 7-item Generalized Anxiety Disorder Scale (GAD-7), was used as a practical self-report anxiety questionnaire that had proved reliable and valid in primary care (20, 21), also in the German version. It comprises 7 items with a range from 0 to 21, with scores of ≥ 5, ≥ 10, and ≥ 15 representing mild, moderate, and severe anxiety symptom levels, respectively. Finally, somatization was measured using the somatic symptom module of the PHQ, the PHQ-15 (22). The PHQ-15 has high internal reliability and construct validity. PHQ-15 covers 15 somatic symptoms or symptom clusters that account for more than 90% of the physical complaints reported in the outpatient setting.

Statistical analysis

Differences between subgroups related to the scales of MBI, PHQ, and GAD-7 were estimated with the Mann–Whitney U test or the Kruskal–Wallis test due to the non-parametric distribution of the scales. Associations between length of sick leave and scales of MBI, PHQ, and GAD-7 were calculated with Spearman's correlation. Subgroup analysis was performed for patients without a psychosomatic diagnosis or other mental illness on their sickness certificate. The data

were analyzed with the statistical software SPSS, PC version 23.0.

The linear predictor for the regression analysis modeled the influence of depression and anxiety related to the extent of burnout symptoms and the length of sick leave, controlled for the demographic variables age, sex, and level of education. The linear predictor was used for a quasi-Poisson regression analysis with the statistical program "R" (R Development Core Team, 2013, version 3.3.2. "Fire Safety"; family = quasi-poisson; link = "log") (23). For details on the statistical methods used see *eBox*. The significance level was set at $p<0.05$. All tests were run two-tailed.

Results

317 patients were asked to participate in the study. 225 (71%) agreed to participate and filled in the questionnaire. 122 (54.2%) were female; the average age was 39.5 years (women: 38.6 years, men: 40.5 years). Most patients were living with a partner and had received higher education *(Table 1)*. The mean length of sick leave was 7.3 days (standard deviation [SD]: 13.4). Lower educational status was associated with longer sick leave. 92 patients refused participation in the study. Non-responder analysis showed no significant difference compared to those who filled in the questionnaire with respect to age (non-responder average age: 38.8 years; $p = 0.271$) or sex (53.3% female non-responders; $p = 0.902$). However, length of sick leave was significantly greater in non-responders (mean: 15.2 days; SD 9.6; $p = 0.001$).

Patients with psychosomatic, mental, or musculo-skeletal disorders, and those with skin diseases had the longest duration of sick leave *(Figure)* (in the latter case, this was explained by one patient with 58 days of

TABLE 2

Correlation between number of sick-leave days, the three subscales of the Maslach Burnout Inventory—General Survey (MBI-GS), the Patient Health Questionnaire (PHQ), and the 7-item Generalized Anxiety Disorder Scale (GAD-7)

		Number of sick-leave days	Emotional exhaustion (MBI)	Depersonali-zation (MBI)	Personal accomplish-ment (MBI)	Depression (PHQ)	Anxiety (GAD-7)
Emotional exhaustion (MBI)	r	0.187					
	p-value	0.005	–				
	n	224					
Depersonalization (MBI)	r	0.166	0.565				
	p-value	0.013	<0.001	–			
	n	223	222				
Personal accomplishment (MBI)	r	−0.073	−0.251	−0.506			
	p-value	0.274	<0.001	<0.001	–		
	n	225	224	223			
Depression (PHQ)	r	0.183	0.611	0.467	−0.284		
	p-value	0.006	<0.001	<0.001	<0.001	–	
	n	222	222	220	222		
Anxiety (GAD-7)	r	0.153	0.575	0.377	−0.195	0.736	
	p-value	0.023	<0.001	<0.001	0.004	<0.001	–
	n	221	220	219	221	218	
Somatization (PHQ)	r	0.224	0.421	0.311	−0.122	0.535	0.395
	p-value	0.001	<0.001	<0.001	0.071	<0.001	<0.001
	n	220	219	218	220	217	217

r, Spearman correlation coefficient (range 0 [minimal] to 1 [maximal])

sickness due to an axillary abscess). Length of sick leave correlated with emotional exhaustion, depersonalization, depression, anxiety, and somatization *(Table 2)*. In the subgroup analysis with exclusion of patients with psychosomatic or mental illness, the correlation between length of sick leave and emotional exhaustion (r = 0.154; p = 0.025), somatization (r = 0.215; p = 0.002) remained significant; the correlation with depression was nearly significant (r = 0.135; p = 0.051) (correlations not shown in table). *Table 2* illustrates a strong correlation between burnout and PHQ / GAD-7 scales.

Regression analysis revealed that the only psychological predictor for length of sick leave was anxiety (exp[0.081] = 1.084; p = 0.013; *Table 3*). This means that if all other variables remained constant, an increase of one point on the anxiety scale would lead to an average increase of 8.4% in the number of sick-leave days. Except for age (exp[0.017] = 1.017; p = 0.041) and education (exp[-0.508] = 0.602; p = 0.029) the predictive value of almost all other variables remained far from statistical significance. If all other variables remained constant, one additional year of age would result in an expected increase of 1.7% in the number of sick-leave days; higher education, on the other hand, goes along

with an average decrease of 40% in length of sick leave. The pseudo R^2 of the model was 0.25 (null deviance: 1899.1 and residual deviance: 1426.7). Sex, depression, and all three MBI-GS scales remained far from statistical significance.

The extent of emotional exhaustion, depersonalization, depression, anxiety, and somatization increased with increasing working hours per week *(Table 4)*. However, there was no significant relation between length of sick leave and the number of working hours. Overall, the participating primary care physicians explored psychological strain and stress factors related to their patients' jobs during consultation in 85 cases. These patients scored higher in the emotional exhaustion, depersonalization, depression, and anxiety scales. Most frequently, primary care physicians asked their patients about "chronic exhaustion" (28.4%), followed by "reduced mood" (26.7%) and 'lower productivity' (24.0%). Almost all patients experienced it as helpful if their doctors addressed these issues (93.8% / 94.9% / 96.4%).

Discussion

To the best of our knowledge, this is the first study in primary care which explored the impact of burnout

symptoms and their associated psychosomatic comorbidity on length of sick leave. The number of sick-leave days correlated with emotional exhaustion, depersonalization, depression, anxiety, and somatization. However, anxiety proved to be the only psychological predictor in quasi-Poisson regression analysis. Patients regarded it as very helpful when primary care physicians explored the psychological strain related to their jobs.

Patients with psychosomatic co-morbidity who only present somatic complaints are often hard to identify, show higher health care utilization, and tend to have longer periods of sick leave (17). It is well known that discussing psychological reasons for feeling sick with patients is often experienced as challenging (24, 25). In the context of the current zeitgeist, the social acceptance of "feeling sick" may be greater when symptoms are attributed to "burnout." This might facilitate the discussion between patients and doctors about reasons for sick leave and their possible association with psychological strains. In line with this, the correlation between length of sick leave and scores on burnout scales points to the existence of such an association. On the other hand, we found a strong correlation between the MBI burnout scales and the PHQ scales reflecting high psychosomatic co-morbidity. Quasi-Poisson regression analysis revealed that the association between burnout and sick-leave days is spurious. Notably, anxiety remained as the only psychological predictor for length of sick leave, whereas the other scales, in particular the MBI-GS scales, had no significant influence. Whether or not burnout is to be regarded as a disease entity of its own, or if burnout symptoms might not be better explained by established psychiatric concepts such as that of depression (1, 10)—is a matter of critical debate. Therapeutic interventions specifically addressing the burnout syndrome have been shown to be effective, however (11, 16). Our results illustrate that the contribution of anxiety disorders to burnout symptoms may have been underestimated. Interestingly, the predictive value of anxiety was even higher in our study than the predictive value of age and education, which are both well known predictors for longer duration of sick leave (26, 27).

Bringing up job-related psychological strains during consultation as a reason for "feeling sick" was appreciated very much by the patients in our study. Further research is necessary to establish the best approach to discussing job-related problems with patients. Patients' workload and overtime hours might provide a first clue. It has been shown that depression (28, 29) and anxiety (30) increase with the number of overtime hours; this also holds true for somatization, as shown in our study for the first time. Notably, patients with whom the issue of exhaustion was addressed by the primary care physician showed increased levels of emotional exhaustion, depersonalization, and increased psychosomatic co-morbidity.

A limitation of our study is that overtime hours were documented subjectively by the patients. It is conceiv-

TABLE 3

Quasi-Poisson regression analysis

Coefficient	β	SE	t	p-value
Intercept	1.585	0.933	1.699	0.091
Sex (male)	0.016	0.202	0.081	0.935
Age	0.017	0.008	2.060	0.041
Education (>10 years of school)	–0.508	0.231	–2.199	0.029
Emotional exhaustion (MBI)	0.095	0.123	0.775	0.439
Depersonalization (MBI)	–0.044	0.108	–0.408	0.684
Personal accomplishment (MBI)	–0.160	0.145	–1.097	0.274
Anxiety (GAD-7)	0.081	0.032	2.516	0.013
Depression (PHQ)	–0.024	0.034	–0.705	0.481

β, regression estimate for log-link; GAD-7, 7-Item Generalized Anxiety Disorder Scale; MBI, Maslach Burnout Inventory; SE, standard error of the regression estimate; t, t-value of the regression estimate; PHQ, Patient Health Questionnaire

able that there is an association between increased psychosomatic morbidity existing a priori and self-reported hours of overtime. However, this would not diminish the benefits of bringing up possible job-related psychological strains during doctor–patient counselling. Another limitation is the cross-sectional design of this study. A longitudinal evaluation might allow the determination of the impact of burnout on the course of mental impairment in comparison with established psychosomatic disease concepts. An important further limitation is the exploratory character of this study; the results therefore have to be interpreted cautiously. However, the correlations of both the MBI-GS and PHQ scales point in the same direction, indicating that a meaningful relationship between psychosomatic co-morbidity and length of sick leave seems plausible. Finally, non-responders had a considerably greater number of sick-leave days. This may mean that these patients may have been suffering from psychological impairment to a greater extent, which in our results would lead to an underestimation of the influence of psychosomatic comorbidity or burnout, respectively, on length of sick leave.

Conclusion

Especially when psychological and somatic symptoms remain unexplained in the consultation, discussing job strains may be a relevant diagnostic tool for primary care physicians. Burnout symptoms seem to play a role in patients requesting sickness certificates. However, this should not hide the fact that burnout is not an established diagnostic entity to explain long durations of sick leave. The impact of anxiety on self-estimated burnout symptoms and sick-leave days may have been underestimated so far. A holistic approach in patient-centered communication should comprise an evaluation of psychosomatic co-morbidity under consideration of the established concepts of depression and

TABLE 4

Relation between number of working hours per week, length of sick leave, and the subscales of the Maslach Burnout Inventory—General Survey (MBI-GS) and the Patient Health Questionnaire (PHQ), or discussion of job-related psychological strains between doctor and patient

Number of working hours per week	n (%)	Number of sick-leave days	Emotional exhaustion (MBI)	Deperson-alization (MBI)	Personal accomplish-ment (MBI)	Depression (PHQ)	Anxiety (GAD-7)	Somatization (PHQ)
		mean (SD)	mean (SD)	mean (SD)	mean (SD)	mean (SD)	mean (SD)	mean (SD)
≤ 40	104 (46.2)	6.2 (8.2)	3.4 (1.0)	2.9 (1.2)	4.8 (0.7)	6.5 (4.5)	5.4 (4.3)	12.8 (6.0)
41–45	75 (33.3)	9.0 (19.7)	3.4 (1.1)	2.5 (1.1)	5.1 (0.6)	6.4 (4.5)	5.1 (4.7)	12.3 (5.7)
46–50	28 (12.4)	5.4 (3.4)	3.9 (0.9)	3.0 (1.1)	5.1 (0.5)	7.0 (3.9)	6.2 (4.0)	13.1 (4.7)
51–55	9 (4.0)	7.8 (12.1)	4.5 (0.7)	3.7 (1.1)	4.8 (0.9)	11.6 (4.3)	10.2 (4.5)	19.8 (2.8)
>55	3 (1.3)	4.0 (1.7)	5.1 (0.5)	3.0 (1.2)	5.1 (0.1)	12.0 (6.6)	11.7 (8.6)	21.0 (5.8)
p-value		0.363	< 0.001	0.020	0.062	0.008	0.007	0.002
Primary care physician addressed exhaustion								
		mean (sd)	mean (sd)	mean (sd)	mean (sd)	mean (sd)	mean (sd)	mean (sd)
Yes	85 (37.8)	10.3 (19.3)	4.0 (1.0)	3.0 (1.0)	4.9 (0.6)	8.4 (4.9)	7.1 (5.0)	14.0 (5.9)
No	137 (60.9)	5.4 (7.4)	3.2 (1.0)	2.7 (1.2)	4.9 (0.7)	5.6 (4.1)	4.6 (4.2)	12.3 (5.7)
p-value		0.023	< 0.001	0.033	0.752	< 0.001	< 0.001	0.052

Mean differences for "Number of working hours per week" were calculated using the Kruskal–Wallis test and those for "... physician addressed exhaustion" using the Mann–Whitney U test

anxiety disorder to enable the provision of adequate diagnostic and therapeutic management for these patients. The context of "feeling sick" needs to be widened beyond work-place related issues. It may be helpful for patients if episodes of depression and/or anxiety in daily life, including the work situation as one part of it, are explored and treated by the primary care physician as well.

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KEY MESSAGES

- The diagnosis "burnout" is a frequent main diagnosis on sickness certificates in primary care, even though the burnout syndrome has not been established as a disease entity of its own.
- Our survey among 225 patients showed a significant correlation of length of sick leave with emotional exhaustion, depersonalization, depression, anxiety, and somatization.
- Regression analysis revealed that only anxiety remained as a significant psychological predictor for length of sick leave. The impact of anxiety on self-estimated burnout symptoms and the number of sick-leave days might have been underestimated so far.
- Bringing up job-related psychological strains during consultation as a reason for "feeling sick" was appreciated very much by the patients in our study.
- A holistic approach in patient-centered communication should comprise an evaluation of psychosomatic comorbidity under consideration of the established concepts of depression and anxiety disorder to enable the provision of adequate diagnostic and therapeutic management for affected patients.

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eBOX

Statistical power

At least 200 patients were needed to demonstrate a low to medium effect size (Pearson correlation) on a 5% level of significance with a Power of 81%. (All tests were run two-tailed, Fisher's z test for testing the null hypothesis: r = 0). We expected a drop out of 10%. Therefore the aim was to include 220 patients.

Testing for collinearity

In our study, we found high to very high collinearity, which raises the question of whether or not our analysis resulted in distinguishable constructs. However, looking at the determination coefficients based on the correlations double-corrected for attenuation (Cronbach Alpha: Depression 0.883; Anxiety 0.894; Emotional exhaustion 0.084), common variances proved to be 72.7% for depression and anxiety, 55.8% for emotional exhaustion and depression, and 57.5% for emotional exhaustion and anxiety. Thus, we obtained distinct constructs even if we take measurement error into account.

Details on quasi-Poisson regression analysis

As further outlined in the Results section, the log-link of the quasi-Poisson model leads to a multiplicative association between the change in the linear predictor and the change in the dependent variable. The reasons for applying this type of regression analysis are threefold:

1. The dependent variable is a count variable;
2. The number of sick-leave days can be assumed to be Poisson-distributed, and
3. the standard Poisson model assumes identical parameters for mean and variance, which is rarely the case and easily accounted for by including an additional parameter for overdispersion, resulting in a quasi-Poisson model with a loosened second moment assumption (variance).