

ORIGINAL RESEARCH:
EMPIRICAL RESEARCH - QUANTITATIVE

Nurses' emotional exhaustion: Prevalence, psychosocial risk factors and association to sick leave depending on care setting—A quantitative secondary analysis

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Abstract

Aims: To explore differences in the prevalence, psychosocial risk factors and the connection to annual sick leave of nurses' emotional exhaustion depending on the care setting.

Design: Quantitative study.

Methods: We conducted a secondary data analysis of a cross-sectional, representative survey with German nurses (BIBB/BAuA-Employment Survey 2018). We analysed data from three groups of nurses (hospital care HC: $n = 333$, nursing homes NH: $n = 143$, home health care HHC: $n = 109$). We calculated prevalence estimates for all psychosocial risk factors and emotional exhaustion and utilized X^2 -tests to explore differences relating to the care setting. We calculated risk estimates using logistic regression analyses.

Results: Forty-four per cent of all nurses reported symptoms of emotional exhaustion. Care settings did not affect prevalence estimates (HC: 45.3%, NH: 37.8%, HHC: 50.5%). Weekend work was a risk factor for exhaustion. Being at the limit of efficiency was the only work-related psychosocial risk factor being independent of the care setting. Emotional demands were a significant risk factor for nurses working in HC and NH, and low team cooperation was a risk factor for nurses working in NH. Nurses' emotional exhaustion is associated with more sick leave days.

Conclusions: The high prevalence of nurses' emotional exhaustion is independent of the care setting. This threatens nurses' health and negatively affects the organization and society due to the relation to sick leave. Weekend work and quantitative demands relate to exhaustion independently of the care context. Emotional demands and low team cooperation show context-specific correlations.

Impact: Organizational interventions that limit quantitative demands are needed to prevent exhaustion among nurses. In HC and NH, measures are needed to improve coping with emotional demands and to strengthen team cooperation. Policymakers and nursing managers should take action to address nurses' emotional exhaustion.

No Patient or Public Contribution: Due to the study design.

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KEYWORDS

emotional exhaustion, health, job demands-resources model, nurses, occupational, prevalence, psychosocial risk factors, representative, sick leave, sickness absence

1 | INTRODUCTION

Nurses are exposed to numerous work-related demands in their daily work. Due to the growing ageing population with increasingly complex care requirements, rising cost pressure in the healthcare sector, and the ongoing staff shortage, nurses' job demands have increased. These stressors affect nurses' health and workability, which becomes obvious regarding the high rates of nurses' sickness absence. Psychological demands and mental health factors play an important role in nurses' sickness absence (Gohar et al., 2020). Especially emotional exhaustion as a key symptom of burnout constitutes a particular health problem among nurses.

1.1 | Background

A recent systematic review with meta-analysis estimated the global prevalence of burnout symptoms across nurses by 11% (Woo et al., 2020). Emotional exhaustion is a key element of the burnout syndrome, in addition to depersonalization and low personal accomplishment (Maslach & Jackson, 1981), and is defined as "feelings of being emotionally overextended and exhausted by one's work" (Wright & Cropanzano, 1998, p. 489). Other exhaustion symptoms are those of being fatigued and experiencing a lack of motivation. In contrast to depression, which might be related to symptomatology (Koutsimani et al., 2019), emotional exhaustion is a phenomenon particular to the work environment (Toker & Biron, 2012). Therefore, burnout was lately defined as an "occupational phenomenon" in the International Classification of Diseases 11th revision by the WHO. It is well-known that nurses have a higher risk of developing exhaustion and burnout than other professional groups (Cañadas-De Fuente et al., 2015; Woo et al., 2020). Emotional exhaustion and burnout have numerous negative impacts for nurses' mental and physical health and, in addition, relate to increased risks of sickness absence, poor work performance (including lower patient safety and lower quality of care), and higher organizational and professional turnover (Dall'Ora et al., 2020; Heinen et al., 2013; Jourdain & Chênevert, 2010; Simon et al., 2005). In particular, emotional exhaustion is considered to be the starting point for developing severe burnout symptoms (Freudenberger, 1970). Considering the many adverse individuals and organizational consequences of emotional exhaustion it is therefore important that care institutions and public services prevent the development of nurses' emotional exhaustion at a rather early stage. Scholars have identified many work factors (e.g. workload, low job control and low social support) that can serve as targets for preventive measures (Dall'Ora et al., 2020).

However, less research has been conducted on the role of organizational context factors, for instance, the care setting at which nurses are employed. In Germany, within the context of our study, and many other countries, these are, among others, hospitals, nursing homes and home health care. Both the tasks of nurses and the working conditions differ in the three care settings (Gregersen, 2010; Schaller et al., 2021). For instance, the salary for nurses working in hospitals is quite higher than for nurses in nursing homes or home health care (Jacobs et al., 2016; Rohwer et al., 2021). Additionally, home health nurses work typically on their own visiting many patients at their private homes in one shift (Gregersen, 2010) while nurses working in stationary settings are working in teams. In Germany, part-time work occurs to a higher percentage in home health care (Federal Statistical Office of Germany, 2021).

Therefore, the health situation might also be different among care settings. For instance, one study found that nurses working in German home health care reported specific psychosocial risk factors of burnout like quantitative demands, emotional demands and work-privacy conflicts less often than nurses working in hospital care or geriatric nursing homes (Nübling et al., 2010). In contrast, the prevalence of few social relations at work—another burnout risk factor—was highest among nurses in home health care. Another study focusing on home health care nurses strengthened the assumption that especially work-privacy conflicts and work stressors like time pressure contribute to the appearance of emotional exhaustion in home health care (Möckli, 2020). For the hospital settings especially work overload and also low social support were associated with emotional exhaustion (Weigl et al., 2016). Ignoring of the role of the care setting in research on nurses' emotional exhaustion is critical, as this contextual factor could be a risk factor in its own right or could shape the effect of other well-known risk factors.

Our hypothesis that care setting as contextual factor affects the development of emotional exhaustion (and burnout) is also supported by results from other international studies showing differences in burnout prevalence within the emergency care setting (Gómez-Urquiza et al., 2017), the primary care setting (Monsalve-Reyes et al., 2018), or home health care (Vander Elst et al., 2016). Differences in burnout rates were also reported for different geographic regions and different specialities, for instance, paediatrics, palliative care or psychiatric nursing (Gómez-Urquiza et al., 2020; Melchior et al., 1997; Pradas-Hernández et al., 2018; Woo et al., 2020).

1.2 | The role of job demands and job resources

The Job Demands-Resources (JDR) model is often used to explain relationships between work characteristics and burnout symptoms

like emotional exhaustion (Bakker & Demerouti, 2017). *Job demands* are defined as “physical, social or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs” and *job resources* as “physical, psychological, social, or organizational aspects of the work” (Demerouti et al., 2001, p. 501). Job resources reduce adverse effects of job demands in relation to the associated physiological and psychological costs and help to reach work goals. Moreover, they stimulate personal growth, as well as promote learning, and development (Demerouti et al., 2001, p.501; Bakker & Demerouti, 2017).

The JDR proposes that job demands are positively and job resources are negatively related to the development of emotional exhaustion. This assumption was recently confirmed in a systematic review with meta-analysis on longitudinal findings from studies with workers from different occupations (Lesener et al., 2019). The review of Dall'Ora and colleagues (2020) revealed similar findings from studies with nurses. Considering potential job demands many studies have revealed, for instance, high workload, high time pressure, low staffing levels and high emotional demands due to patients as risk factors for burnout. On the resources side, social support from colleagues or supervisors, high task-related and time-related autonomy, and a good team climate have been found negatively related to burnout, thus having a protective function. However, Bakker and Demerouti (2017) have noted that the role of these variables as a function of higher-level contextual variables, such as nurses' care settings in our study context, has received little attention in JDR research. Therefore, to implement preventive interventions, which are feasible to the specific nurse setting it is necessary to explore the differences between nurses' health problems and their work-related driving factors across with a context-sensitive approach (Schaller et al., 2021).

2 | THE STUDY

2.1 | Aims

The main purpose of this study with German nurses was to uncover the role of nurses' care setting in combination with other well-known individual and psychosocial work-related risk factors for the development of emotional exhaustion. In this line, we examined if there are (research question 1) differences in individual and work-related characteristics or (research question 2) in the prevalence of nurses' emotional exhaustion depending on care setting (i.e. nurses working in hospitals, nursing homes and home health care), (research question 3) how work-related psychosocial risk factors (e.g. high job demands and low [social] job resources) affect the development of emotional exhaustion in each setting, and explore (research question 4) the relationship of emotional exhaustion and annual sick leave days.

2.2 | Design and data collection

A secondary analysis of data from the seventh national survey of German employees (BIBB/BAuA Employment Survey 2018) was conducted. This regularly performed cross-sectional survey observes changes in the work-related demands and resources using a representative sample of German employees. Inclusion criteria for the study are minimum age of 15 years and paid employment of at least 10h per week. The Federal Institute for Occupational Safety and Health (Germany) assigned a research company (Kantar Public) to collect data by conducting complete standardized telephone interviews (10-2017-04-2018).

2.3 | Sample

The total sample consisted of 20,012 participants from different professions. Of these, we considered $N = 611$ nurses for our analyses (hospital care: $n = 343$, nursing homes: $n = 151$, and home health care: $n = 117$). After excluding participants with missing data ($n = 26$, 4.3%), the final sample consisted of $N = 585$ nurses (hospital care: $n = 333$, nursing homes: $n = 143$, and home health care: $n = 109$). More detailed information about the methods and the sampling of this survey is reported by Rohrbach-Schmidt and Hall (2020).

2.4 | Ethical considerations

The data in this study originate from the BIBB/BAuA Employment Survey 2018 conducted by the Federal Institute for Vocational Education and Training (BIBB) in collaboration with the Federal Institute for Occupational Safety and Health. The study design was approved by the ethics committee of the Federal Institute for Occupational Safety and Health (Germany). The ethics committee reviewed compliance with the ethical guidelines. Each participant was informed about the procedure and agreed to participate. All relevant guidelines and regulations were complied with. The data set was available in anonymized form, thus no personal data were identifiable.

2.5 | Validity and reliability/Rigour

2.5.1 | Emotional exhaustion

We assessed emotional exhaustion with responses to the question 'Please tell me if emotional exhaustion has occurred in the last 12 months during your work or on working days?' (responses: 1 = 'yes', 2 = 'no').

We used a subsample of 448 nurses from the 3rd wave of the BAuA-Working Time Survey 2019 to validate this one-item measure (a scientific use file can be requested here: <https://www.>

baua.de/DE/Angebote/Forschungsdaten/Arbeitszeitbefragung.html). This study is a representative survey of German workers ($n = 9,382$) covering aspects of “working time, other working conditions, health and well-being” (Wöhrmann et al., 2021, p. 287). In addition to the item on emotional exhaustion, the study did also assess emotional exhaustion with the validated four-item scale from the OLBI questionnaire (Demerouti et al., 2010; $\alpha = .73$). Both measures correlated positively ($r = .41, p < .001$), indicating the single item assessment as valid screening for emotional exhaustion symptoms.

2.5.2 | Job demands

We assessed different job demands each with one item in response to the general question ‘How often in your work does it occur that ...’. More specifically, we assessed *deadline or performance pressure* (‘... you have to work under strong deadline or performance pressure?’), *being at the limit of efficiency* (‘... you have to go to the limits of your capabilities?’), *work interruptions* (‘... you get disturbed or interrupted at work, e.g. by colleagues, bad material, machine malfunctions or telephone calls?’), *prescription of outputs or time* (‘... you are prescribed an exact number of pieces, a certain minimum output or the time to do a certain task?’), and *emotional demands* (‘... your job puts you in situations that stress you emotionally?’) (Rohrbach-Schmidt & Hall, 2020, p.40).

The answer options could be given in the form of a four-point-frequency scale (1 = ‘never’, 2 = ‘rarely’, 3 = ‘sometimes’, 4 = ‘often’). For our analyses responses were binary coded with 1 = ‘frequently’ (=4) and 2 = ‘not frequently’ (=1-3).

2.5.3 | Job resources

The following (social) job resources were assessed with one-item measures: *being a part of community* (‘How often do you feel as a part of a community at your workplace?’), *team cooperation* (‘How often do you feel the cooperation between you and your colleagues is good?’), *colleague support* (‘How often do you get help and support for your work from colleagues when you need it?’), *supervisor support* (How often do you get help and support for your work from your line manager when you need it?) (Rohrbach-Schmidt & Hall, 2020, p.40).

The answer options could be given in the form of a four-point-frequency scale (1 = ‘never’, 2 = ‘rarely’, 3 = ‘sometimes’, 4 = ‘often’). For our analyses responses were binary coded with 1 = ‘frequently’ (=4) and 2 = ‘not frequently’ (=1-3).

2.5.4 | Annual sick leave days

Annual sick leave days were assessed with one item: ‘Have you stayed ill at home in the last 12 months or have you called

in sick?’ (responses: number of days). Data were recoded to (1 = ‘no days/year’, 2 = ‘1-10 days/year’ and 3 = ‘>10 days/year’).

2.5.5 | Control variables

The selection of the control variables is based on previous research results, which indicate that these factors might be confounders in the relationships between job demands, job resources and emotional exhaustion (Weigl et al., 2016; Yeatts et al., 2018).

Demographic variables consisted of sex (responses: 1 = ‘male’, 2 = ‘female’), age (1 = ‘15-34 years’, 2 = ‘35-54 years’, 3 = ‘> 55’), and marital status (responses: 1 = ‘married’, 2 = ‘single’, 3 = ‘divorced’, 4 = ‘widowed’, 5 = ‘registered civil partnership’). Following work characteristics were captured: type of employment (responses: 1 = ‘part-time’, 2 = ‘full-time’), shift work (responses: 1 = ‘yes’, 2 = ‘no’), weekend work at least once a month (responses: 1 = ‘yes’, 2 = ‘no’), and organizational tenure (responses: 1 = ‘<2 years’, 2 = ‘3-5 years’, 3 = ‘6-10 years’, 4 = ‘> 11 years’).

2.6 | Data analysis

We conducted all statistical analyses with IBM SPSS Statistics (version 26). Parameter estimates with p-values (two-tailed) lower than .05 were considered as significant.

First, we calculated absolute numbers (n) and prevalence estimates (%) for all psychosocial risk factors, the controlled variables and emotional exhaustion. We used X^2 -tests to explore potential differences relating to care setting (research question 1 and 2). Second, to answer research question 3, we performed univariate (for crude estimates) and multivariate logistic regression (for adjusted estimates) analyses to investigate associations between the control variables (which significantly related to nurses’ exhaustion), the psychosocial risk factors (i.e. low (social) job resources and high job demands) and the risk for reporting emotional exhaustion. Multi-collinearity between psychosocial risk factors was tested. No correlation was higher than $r = .42$ and the average intercorrelation was $r = .17$. Moreover, variance inflation factors ranged from 1.16 to 1.39, which is lower than a desired cutoff value of 2 that has been proposed in the literature (Craney & Surlles, 2007). These results suggest that there were no severe problems of multicollinearity.

We performed the analyses for the total sample and for each setting (hospital care, nursing home and home health care). Effect size estimates are reported using odds ratios and corresponding 95% confidence intervals (CI) (if this excludes ‘1’ the effect is significant with $p < .05$). We report Nagelkerkes’

R^2 as a measure of explained variance for the adjusted models (Nagelkerke, 1991).

Finally, we performed univariate and multivariate multinomial logistic regression analyses to estimate crude and adjusted (stepwise procedure with control variables and psychosocial risk factors) odds ratio for relationships between emotional exhaustion and annual sick leave days.

3 | RESULTS

3.1 | Sample characteristics

The total sample consisted of 585 nurses, of whom 333 worked in hospital care, 143 in nursing homes and 109 in home health care.

TABLE 1 Individual and work-related sample characteristics

	Total sample (n = 585)	Hospital care (HC; n = 333)	Nursing home (NH; n = 143)	Home health care (HHC; n = 109)	Differences between care setting	
					χ^2	p
Sex						
Female	505 (86)	283 (85)	123 (86)	99 (91)	2.38	.303
Male	80 (14)	50 (15)	20 (14)	10 (9)		
Age						
15–34 years	86 (15)	43 (13)	23 (16)	20 (18)	5.06	.281
35–54 years	294 (50)	180 (54)	65 (45)	49 (45)		
>54 years	205 (35)	110 (33)	55 (39)	40 (37)		
Organizational tenure						
<2 years	106 (18)	31 (9)	37 (26)	38 (35)	78.52	<.001 HC > NH, HHC
3–5 years	72 (12)	32 (10)	22 (15)	18 (17)		
6–10 years	108 (19)	51 (15)	36 (25)	21 (19)		
>11 years	299 (51)	219 (66)	48 (34)	32 (29)		
Working time						
Shift work	301 (52)	183 (55)	72 (50)	46 (42)	5.43	.066
Weekend work	520 (89)	290 (87)	129 (90)	101 (93)	2.91	.233
Employment						
Part-time	226 (39)	116 (35)	60 (42)	50 (46)	5.10	.078
Full-time	359 (61)	217 (65)	83 (58)	59 (54)		
Marital status						
Married	305 (52)	179 (54)	70 (49)	56 (51)	3.39	.907
Single	139 (24)	74 (22)	35 (25)	30 (28)		
Divorced	114 (20)	63 (19)	32 (22)	19 (17)		
Widowed	26 (4)	16 (5)	6 (4)	4 (4)		
Civil partnership	1 (0.2)	1 (0.3)	0 (0)	0 (0)		
(High) job demands						
Deadline/performance pressure	422 (72)	262 (79)	94 (66)	66 (61)	17.28	<.001 HC > NH, HHC
Being at the limit of efficiency	247 (42)	154 (46)	60 (42)	33 (30)	8.59	.014 HC > HHC
Work interruptions	401 (69)	269 (81)	88 (62)	44 (40)	66.52	<.001 HC > NH > HHC
Prescribed output/time	260 (44)	123 (37)	70 (49)	67 (62)	21.57	<.001 HC < NH, HHC
Emotional demands	220 (38)	121 (36)	58 (41)	41 (38)	0.76	.684
(Low) Job Resources						
(Low) Colleague support	105 (18)	46 (14)	28 (20)	31 (28)	12.27	.002 HC < HHC
(Low) Supervisor support	304 (52)	187 (56)	74 (52)	43 (39)	9.18	.010 HC > NH, HHC
(Not) Part of a community at the workplace	79 (14)	43 (13)	20 (14)	16 (15)	0.257	.879
(Low) Team cooperation	75 (13)	35 (11)	22 (15)	18 (17)	3.76	.152

Note: Significant differences ($p < .05$) in variables depending on care setting are in boldface.

The majority of the respondents were female (hospital care: 85.0%; nursing home: 86.0%, home health care: 90.8%) and between 35 and 54 years old. The average age was 47.89 years ($SD = 10.85$).

3.2 | Individual and work-related characteristics depending on care-setting

There were no significant differences between nurses working in hospital care, nursing homes and home health care in relation to sex, age, weekend work, part- and fulltime work and marital status, as shown in [Table 1](#). Nurses working in hospital care reported a longer organizational tenure than nurses working in nursing homes and home health care.

We found differences between care setting in relation to high job demands and low job resources. More specifically, nurses working in hospital care reported more deadline/performance pressure, more work interruptions, less prescribed output/time and lower supervisor support than nurses working in nursing homes and home health care. Moreover, nurses working in hospital care reported more often being at the limit of efficiency but receiving support from colleagues more frequently than nurses working in home health care. In addition, the frequency of work interruptions was higher for nurses in nursing homes than in home health care.

3.3 | Prevalence of emotional exhaustion

Forty-four per cent (95% CI [40.5, 48.5]) of all nurses reported symptoms of emotional exhaustion (hospital care: $n = 151$, 45.3%, 95% CI [40.1, 50.7]; nursing homes: $n = 54$, 37.8%, 95% CI [30.1, 45.9]; home health care: $n = 55$, 50.5%, 95% CI [41.2, 59.7]). Prevalence estimates did not differ across settings ($X^2(2) = 4.29$, $p = .117$).

3.4 | Risk factors of emotional exhaustion

We, first, inspected relationships between the control variables and emotional exhaustion. Prevalence estimates of nurses' emotional exhaustion were not related to age ($X^2(2) = 0.20$, $p = .906$), organizational tenure ($X^2(3) = 3.44$, $p = .327$), shift work ($X^2(1) = 3.49$, $p = .062$), employment ($X^2(1) = .577$, $p = .448$), and marital status ($X^2(4) = 1.62$, $p = .805$). However, female nurses (46.1%) reported emotional exhaustion more often than male (33.8%) nurses ($X^2(1) = 4.29$, $p = .038$). Moreover, nurses working at weekends (46.2%) reported emotional exhaustion more often than nurses not working at weekends (30.8%), ($X^2(1) = 5.54$, $p = .019$). Therefore, we included sex and weekend work in the adjusted models.

Results of the crude and adjusted (multivariate) logistic regression analyses with sex, weekend work, (high) job demands and (low) job resources as risk factors of emotional exhaustion are presented in [Table 2](#). For the full sample risk factors explained about 23% of variance in nurses' emotional exhaustion but estimates differed

depending on care setting (hospital care: 18%, nursing homes: 43%, home health care: 32%).

For the full sample, crude risk estimates of all factors were significant and in the expected direction. However, in the adjusted model only deadline and performance pressure ($OR = 1.60$), being at the limit of efficiency ($OR = 2.28$), emotional demands ($OR = 1.85$), and low team cooperation ($OR = 2.59$) remained significant. In the following, we performed sensitivity analyses and examined these models for each care setting. Considering the fully adjusted models, we found that being at the limit of efficiency ($OR_{Hospital\ care} = 1.95$, $OR_{Nursing\ home} = 3.41$, $OR_{Home\ health\ care} = 3.83$) was the only risk factors being independent of care setting. Deadline and performance pressure was no longer significant, emotional demands was a significant risk factor for nurses working in hospital care ($OR = 1.75$) and nursing homes ($OR = 3.00$), and low team cooperation was a risk factor nurses working in nursing homes ($OR = 7.68$).

3.5 | Emotional exhaustion and sick leave days

Results of the multinomial regression analyses with emotional exhaustion predicting annual sick leave days are displayed in [Table 3](#). In the full sample, nurses reporting high emotional exhaustion had significantly higher odds to report sick leave days within the last year than nurse without exhaustion (crude models; 1-10days/year: $OR = 1.56$, >10days/year: $OR = 2.69$). Adjusting for job demands and (low) job resources the increased the relative chance to report more than 10days sickness absence per year for emotional exhausted nurses remained significant ($OR = 2.23$). Considering the adjusted models, only for nurses working in hospital care the odds of reporting more than 10 sick leave days during the last year were significantly higher for exhausted than for non-exhausted nurses ($OR = 2.19$).

4 | DISCUSSION

The study aimed to clarify the role of the nursing setting as well as individual and work-related risk factors in the development of emotional exhaustion among nurses. Moreover, the relationship between emotional exhaustion and annual sick leave days should be examined. The results of the presented study emphasize that the prevalence of nurses' emotional exhaustion in Germany is quite high.

Comparisons within the underlying data set of the BIBB/BAuA Employment Survey (2018) regarding the prevalence of emotional exhaustion among nurses with other occupational groups also confirm that nurses are at particular risk (Federal Institute for Occupational Health and Safety, 2019). The three care settings differ in regard to job demands and resources, for instance being at the limit of efficiency or work interruptions (research question 1).

However, care settings did not affect prevalence estimates in our sample (research question 2). This is in line with the results from

TABLE 2 Crude and adjusted odds ratios (95% confidence intervals) of individual and work-related factors on emotional exhaustion

	Total sample (n = 585)						Hospital care (n = 333)		
	Crude			Adjusted			Crude		
	OR	95% CI		OR	95% CI		OR	95% CI	
		LL	UL		LL	UL		LL	UL
Deadline /performance pressure ^a	2.95	1.98	4.39	1.60	1.00	2.55	2.78	1.56	4.96
Being at the limit of efficiency ^a	3.62	2.56	5.11	2.28	1.53	3.41	3.18	2.03	4.99
Work interruptions ^a	1.56	1.09	2.24	0.97	0.64	1.48	2.49	1.38	4.53
Prescribed output/time ^a	2.17	1.55	3.03	1.30	0.89	1.91	2.21	1.41	3.49
Emotional demands ^a	2.77	1.96	3.92	1.86	1.26	2.74	2.76	1.74	4.38
(Low) Colleague support ^b	2.49	1.61	3.85	1.43	0.83	2.44	2.31	1.21	4.39
(Low) Supervisor support ^b	1.95	1.40	2.72	1.30	0.88	1.90	1.66	1.07	2.58
(Not) Part of a community at the workplace ^b	2.43	1.48	3.96	1.31	0.72	2.39	2.26	1.17	4.37
(Low) Team cooperation ^b	3.52	2.08	5.97	2.49	1.30	4.76	2.55	1.22	5.31
R ² (Nagelkerke)	.228								

Note: All adjusted models further controlled for sex and weekend work. Significant parameter estimates ($p < .05$) are in boldface.

Abbreviations: CI, confidence interval; LL, lower limit of the 95% CI; UL, upper limit of the 95% CI.

^aFrequently (risk) vs. not frequently.

^bNot frequently (risk) vs. frequently.

	Model	No sick-leave days in the last 12 months vs.			
		1–10 days/years		>10 days/year	
		OR	95% CI	OR	95% CI
Total sample	Crude	1.56	[1.03, 2.35]	2.69	[1.76, 4.09]
	Adjusted	1.46	[0.93, 2.29]	2.23	[1.40, 3.56]
Hospital care	Crude	1.26	[0.72, 2.20]	2.53	[1.44, 4.34]
	Adjusted	1.15	[0.62, 2.56]	2.19	[1.17, 4.09]
Nursing home	Crude	2.09	[0.89, 4.88]	2.61	[1.12, 6.10]
	Adjusted	2.33	[0.83, 6.54]	2.30	[0.82, 6.42]
Home health care	Crude	1.77	[0.72, 4.36]	3.22	[1.15, 8.99]
	Adjusted	1.24	[0.43, 3.57]	1.83	[0.55, 6.13]

Note: OR = odds ratio, 95% CI = 95% confidence interval. Adjusted models used stepwise procedure controlling for deadline/performance pressure, being at the limit of efficiency, work interruptions, prescribed output/time, emotional demands, colleague support, supervisor support, part of a community at the workplace, team cooperation (note that sex, age, organizational tenure, working time, employment and marital status did not relate to sickness absence days). Significant parameter estimates ($p < .05$) are in boldface.

TABLE 3 Crude and adjusted odds ratios (95% confidence intervals) of emotional exhaustion as predictor for annual sick leave days

Schaller et al. (2021) who reported only small differences in health problems between the care settings. However, this could also be a result of lacking systematic analyses. Other authors stated that emotional exhaustion and burnout rates could be higher in hospital settings than in home health care (Aiken et al., 2012; Matziari et al., 2017). Based on the presented results this could not be proven for Germany. The only individual risk factor for developing emotional exhaustion was sex. Therefore, female nurses have a higher risk of suffering from emotional exhaustion than male nurses, which

was found for Germany (Weigl et al., 2016) as well as other countries (Chen et al., 2021; Hu et al., 2020). One possible explanation for this could be that women in Germany are still more involved in child care and therefore face a double burden.

Regarding work characteristics, working at weekends was the only risk factor for high levels of emotional exhaustion that was also confirmed in other studies. Thus, working at “unsocial hours” that impede social participation and might elicit problems with private obligations (e.g. childcare and partnership time) can

			Nursing home (n = 143)						Home health care (n = 109)					
Adjusted			Crude			Adjusted			Crude			Adjusted		
95% CI			95% CI			95% CI			95% CI			95% CI		
OR	LL	UL	OR	LL	UL	OR	LL	UL	OR	LL	UL	OR	LL	UL
1.43	0.74	2.75	4.08	1.78	9.35	1.74	0.58	5.17	2.87	1.29	6.38	1.72	0.61	4.82
1.95	1.16	3.27	5.42	2.60	11.29	3.41	1.29	9.01	4.79	1.91	12.02	3.83	1.27	11.54
1.62	0.85	3.10	1.85	0.90	3.80	1.01	0.38	2.66	0.83	0.39	1.79	0.43	0.15	1.19
1.36	0.81	2.28	1.95	0.98	3.88	0.98	0.39	2.46	2.67	1.20	5.92	1.66	0.59	4.67
1.75	1.05	2.94	3.52	1.73	7.17	3.00	1.23	7.33	2.33	1.05	5.17	1.63	0.59	4.49
1.24	0.57	2.70	3.26	1.39	7.65	2.59	0.68	9.81	2.23	0.95	5.28	1.22	0.38	3.84
1.22	0.74	2.01	3.06	1.50	6.24	1.81	0.73	4.49	2.29	1.04	5.04	1.52	0.53	4.34
1.48	0.67	3.26	1.80	0.69	4.65	0.34	0.08	1.53	5.26	1.41	19.70	3.43	0.62	19.09
1.65	0.66	4.10	5.83	2.11	16.05	7.68	1.92	30.81	4.27	1.30	13.97	2.29	0.46	11.35
.182						.428						.325		

negatively affect mental health (Amlinger-Chatterjee, 2016; Schmucker, 2020).

Meanwhile, the work-related psychosocial risk factors for nurses' emotional exhaustion differ across settings. While emotional demands are a predictor for nurses working in nursing homes and hospitals, low team cooperation was only a risk factor for nurses working in nursing homes. It is possible that emotionally stressful situations, which occur with roughly equal frequency in all three settings, have a stronger influence on the development of emotional exhaustion in hospitals or nursing homes than in home health care due to the severity of the illnesses. Being at the limit of efficiency is a risk factor for emotional exhaustion that is independent of the care setting (research question 3).

Vander Elst et al. (2016) findings indicate that emotional demands are not only a predictor of nurses' emotional exhaustion but even is associated with burnout. Adjusting for sex and weekend work, deadline and performance pressure was no longer a significant predictor of nurses' emotional exhaustion, although previous research claimed this connection (Cao & Naruse, 2019; Dall'Ora et al., 2020; Elbejjani et al., 2020). The protective effect of team cooperation in relation to emotional exhaustion was only demonstrated in the overall sample and in the context of nursing homes. Apart from team cooperation, the job resources did not significantly reduce the risk for emotional exhaustion in our sample. But other studies have shown the important role of social support from colleagues and supervisors for nurses' mental health (Nabizadeh-Gharghozar et al., 2020; Weigl et al., 2016). Other job demands that have not been presented may also increase the risk of emotional exhaustion and even burnout. For example, work-family conflicts play an important role (Yeh et al., 2021).

However, the results show that nurses' emotional exhaustion is associated with being sick more than 10 days per year (research question 4). Preceded research even shows a higher risk of occupational disability (Gustafsson et al., 2019) and early retirement (Simon et al., 2005; Spence Laschinger et al., 2012). Furthermore, it is indicated that nurses who experience emotional exhaustion tend to suffer also from other psychosomatic complaints and physical exhaustion (Lee et al., 2015; Van der Doef et al., 2012). When nurses develop burnout, they are even at higher risk for other mental health problems and show a higher rate of cardiovascular problems (Zhang et al., 2018). The connection between emotional exhaustion and depression is also implied (Chen & Meier, 2021; Weigl et al., 2016). It is assumed that during the Covid-19 pandemic, burnout rates among nurses even increased and better support is more urgent than ever (Galanis et al., 2021).

4.1 | Limitations

The following limitations should be considered when interpreting our study results. Although the BIBB/BAuA survey covers a representative population of employees in Germany, the sample of included nurses is restricted. This could be a reason for the lacking significance of some results that were consistent with expectations (for example deadline and performance pressure as a risk factor for emotional exhaustion). Thus, the prevalence estimates should be proven in the next wave of the BIBB/BAuA survey. A generalization of the data across countries is, regarding the small sample and the varying working conditions of nurses, especially in the different care

settings, questionable. Nevertheless, it is comprehensible that being at the limit of efficiency is a risk factor for nurses' emotional exhaustion regardless of other working conditions.

Due to voluntary participation, selection or response bias might have affected our results, in particular, an analysis of non-responders is not available. Moreover, the cross-sectional nature of this study prohibit concluding any causal effects regarding the relationships tested. It is not warranted to conclude that the link between risk and outcome factors is unidirectional. As reported above, other authors have also uncovered further risk factors for nurses' emotional exhaustion that were not under the scope of this study's analyses. Furthermore, all variables were assessed via self-reports and single-item measures. This holds the risk for low reliability and common-method variance. Although this approach might affect the precision of measurements, it promoted the participants' compliance during telephone interviews.

Within the telephone interviews, no definition of emotional exhaustion was given. However, emotional exhaustion is a subjective experience and is usually assessed by individual statements. In addition, we found substantial positive relationships between our screening measure with an established and validated scale. Moreover, the survey is a snapshot of the nurses' work and health situation. The manifestation or affirmation of emotional exhaustion may vary over time.

In sum, more data are needed to explore setting-specific work-related risk factors of nurses' emotional exhaustion and sickness absence differences in more detail.

4.2 | Implications

Regarding German nurses' high rates of emotional exhaustion, it is urgent to develop feasible interventions to reduce possible consequences for instance burnout or high sickness absence. Zhang et al. (2020) pointed out in their systematic review with meta-analysis about interventions to decrease physicians' and nurses' burnout symptoms that there are individual-focused, structural or organizational and combined interventions. Lee et al. (2016) concluded in their systematic review with meta-analysis that interventions aiming to improving coping strategies, for instance, cognitive-behaviour training, stress management, mindfulness-based programmes and team-based support groups, can reduce nurses' emotional exhaustion and burnout. Regarding the dimension of emotional exhaustion, these positive effects remained stable for 1 year. Moreover, Suleiman-Martos et al. (2020, p.1124) stated in their meta-analysis that mindfulness training reduces burnout, decrease scores for emotional exhaustion and depersonalization, and increased the scores for personal accomplishment. With the help of such effective burnout interventions, high rates of sick leave days could also be prevented in the longer term (Borritz et al., 2006).

Yoga practice seems also to be effective in reducing stress and burnout symptoms among healthcare workers (Cocchiara

et al., 2019). According to Westermann et al. (2014), work-directed interventions or a combination of individual-focused and work-directed interventions are more effective to reduce burnout over longer-term in comparison to individual-focused interventions on their own.

Given our results, such work-directed interventions should, in particular, focus on reducing and/or managing high quantitative (i.e. prevention to be at the limit of efficiency) and emotional demands and strengthening team cooperation. There is little data about setting-specific interventions, which take the different working conditions into account. For example to strengthen team cooperation, especially in nursing homes, the following measures are named: regular and structured team meetings, introduction of team goals and a continuous team development process (Flepp, 2014).

With regard to quantitative demands, staffing levels and working time arrangements (e.g. shift schedules, breaks and prevention of overtime) should be considered. With regard to emotional demands, the assignment of patients with high care demands (including the potential for difficult interactions, for example, aggressiveness) and opportunities for regular relief should be in focus. Targeted measures to strengthen nurses' team cooperation could be, for instance, supportive followership or skilled communication emphasis (Barton et al., 2018), which then, in turn, might protect nurses' from developing emotional exhaustion. Participatory approaches in particular are very effective for such a redesign of work organization because they strengthen motivation for change and use nurses' work-related competence and knowledge in such a way that the interventions are optimally embedded in the specific organizational context (Stab & Hacker, 2018).

5 | CONCLUSION

Emotional exhaustion is highly prevalent among German nurses. Individual consequences for the nurses like threatening mental and physical health as well as organizational consequences like poor work performance, lower patient safety and quality of care, higher organizational and professional turnover, and higher sickness absence are documented. To prevent staff shortages and adverse effects on public services and society, interventions are necessary that improve the working conditions for nurses and reduce their risk of emotional exhaustion. It has to be considered that working conditions like working on weekends might lead to negative health outcomes like emotional exhaustion. Improving the staffing and providing better compensation measures like more rest time or benefits could reduce nurses' burden. On the one hand, organizational interventions aiming to reduce performance pressure and time pressure and, in turn, preventing nurses feel being at the limit of efficiency are needed. Additionally, measures are essential, that promote job resources such as nurses' team cooperation. On the other hand, individual-focused measures helping to cope with work-related stressors should be implemented. Such interventions should also take individual risk factors like sex into account.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE): (1) substantial contributions to conception and design (JP, JW, MM), acquisition of data, or analysis (JP, JW) and interpretation (JP, JW, MM) of data; (2) drafting the article or revising it critically for important intellectual content (JO, JW, MM).

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

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