Original article



Scand J Work Environ Health. 2024;50(7):519–526. doi:10.5271/sjweh.4181

# Impact of work–life interference on burnout and job discontent: A one-year follow-up study of physicians in Sweden

by Britta E Gynning, MS,[1] Filip Christiansen, MD,[1] Ulrik Lidwall PhD,[2] Emma Brulin, PhD [1]

Gynning BE, Christiansen F, Lidwall U, Brulin E. Impact of work–life interference on burnout and job discontent: A one-year follow-up study of physicians in Sweden. *Scand J Work Environ Health.* 2024;50(7):519–526.

**Objectives** In recent years, increased physician workload has led to higher levels of interference between work and private life with increasing stress and job discontent. The objective of this paper was to study if the experience of work–life interference (WLI) is associated with a high risk of burnout and discontent with work (turnover intention and job dissatisfaction) the following year among physicians in Sweden.

**Methods** The study applied data for 2021 and 2022 from the Longitudinal Occupational Health survey for Health Care professionals in Sweden study. The data comprised a representative sample of physicians (N=1575) working in Sweden. Descriptive analyses included frequencies and estimates of prevalence with Chi-square and McNemar tests. Analyses of association were assessed through logistic regression reporting odds ratios (OR) and 95% confidence intervals (CI) adjusting for demographics and work-related factors.

**Results** Higher levels of WLI in 2021 were associated with 1.53 (95% CI 1.05–2.25) times higher odds of reporting a high risk of burnout, 2.06 (95% CI 1.68–2.54) times higher odds of reporting job dissatisfaction, and 1.72 (95% CI 1.47–2.00) times higher odds of reporting turnover intention in 2022.

**Conclusions** Experiencing WLI negatively affects mental well-being and work satisfaction among physicians in Sweden. This could ultimately impact the quality of care and necessitates further research to clarify the role of WLI among healthcare workers in Sweden.

**Key terms** healthcare worker; longitudinal; mental health; psychosocial work environment; well-being.

Physician burnout – a work-related state of exhaustion characterized by extreme tiredness, reduced ability to regulate cognitive and emotional processes, and mental distancing (1) – and discontent with work (ie, job dissatisfaction and turnover intention) constitute a major challenge for healthcare services and quality of care (2–6). To retain physicians at their jobs, research must identify work factors that drive and maintain ill health and discontent with work (7, 8).

In a recently published Swedish report, work–life interference (WLI), ie, incompatible role pressures stemming from the work domain to the private life domain (9, 10), was identified as a common work-related issue for physicians in Sweden (11). This is confirmed in international research, which shows that for physicians in Norway, Germany, and the United States, WLI has been and remains high (4, 6, 12–14). Thus, an important next step is to investigate whether WLI is associated with a subsequent high-risk of burnout and discontent with work among physicians in Sweden.

Indeed, evidence shows that WLI is related to high levels of strain and stress (13, 15, 16), burnout (4, 17), and, over time, an increase in sickness absence (18). Moreover, Lidwall et al (19, 20) have accentuated the increased risk of mental disorders in higher-status occupations when exposed to WLI. Fub et al (4) have observed similar results, which investigated variations in the impact of WLI between German physicians and the general German population. International studies also indicate an association between WLI and discontent with work (4, 17, 21).

Much of the current evidence on the association between WLI and ill-health and discontent with work, respectively, springs from cross-sectional studies (17).

1 Unit of occupational medicine, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.
2 Division of Insurance Medicine, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; Department for Analysis, Swedish Social Insurance Agency, Stockholm, Sweden.

Correspondence to: Britta E Gynning, Institute of Environmental Medicine, Karolinska Institutet, Nobels väg 13, 171 65 Solna, Sweden. [E-mail: Britta.elsert.gynning@ki.se]

Meanwhile, many cross-sectional associations may disappear or change over time and more longitudinal studies are therefore needed to ascertain the direction and associations of WLI (17). Also, although physicians seem to be especially exposed to WLI, few studies have linked their WLI to burnout and discontent with work (17). Thus, this study aims to determine if WLI is associated with a high burnout risk and discontent with work, ie, job dissatisfaction and turnover intention, the following year among physicians in Sweden.

## Methods

This study applies data from the Longitudinal Occupational Health survey for HealthCare professionals in Sweden (LOHHCS). Baseline data was collected in 2021, including a sample of 6699 randomly selected physicians from the Swedish Occupational Register, based on 12 strata (the six care administrative regions of Sweden and primary versus hospital care facilities). The baseline response rate was 41.2% (22). The LOHHCS cohort is an open cohort, meaning that those who exited the labor market (ie, retired, died, or moved out of the country; N=697) were excluded from follow-up. The follow-up survey was distributed from March to June 2022. A total of 6002 physicians received the survey at both time points, with 1575 physicians (26.2%) responding at both measurement points.

Statistics Sweden, the Swedish Government agency administrating and producing official statistics, was responsible for sampling and collecting data. At each data collection, they analyzed missing data by comparing the responses to the sample and the population using the Swedish Total Population Register including individuals' legal sex, age, birth country and civil registration conditions. We analyzed missing data by comparing those who received the survey in both 2021 and 2022 to those who only responded in 2021. The analysis showed that 57% of women and 59% of men answered both times. The prevalence of sickness absence was 10.0% among those only responding in 2021 and 9.3% in the analytical sample. The mean value of burnout in 2021 was 1.82 [standard deviation (SD) 0.63] for those who only responded in 2021 and 1.80 (SD 0.58) for our analytical sample. For WLI in 2021, the mean values and standard deviation were the same for both groups (2.96, SD 1.01).

### Study measures

*Exposure.* Baseline WLI was assessed using a subset of the scale proposed by Fisher and colleagues (10). WLI was measured using 5 items (supplementary material, www.sjweh.fi/article/4181, table S1) measured on a five-point Likert scale ranging from 1–5: "not at all" to "almost all the time". The five items were compiled into a grand mean index (α:0.931), with a higher score indicating more WLI.

*Outcomes.* The first outcome measure, high burnout risk, was assessed using the validated Burnout Assessment Tool 12 (BAT-12) (23). BAT-12 comprises 12 items answered using a five-point Likert scale ranging from 1–5: "never" to "always". The 12 items were compiled using a grand mean score, creating a total BAT-index (α:0.847). The BAT index was dichotomized using a validated cut-off value for a high risk of burnout >2.96, according to recommendations made by Schaufeli et al (24) who argue that individuals scoring above the cut-off value of BAT-12 most certainly will be diagnosed with clinical burnout if medically assessed.

Job dissatisfaction and turnover intention were measured using single items. Job dissatisfaction concerns the individual's overall dissatisfaction with their job. Turnover intention concerned how often in the last 12 months the individual has considered applying for a new job. Each question was answered using a 5-point Likert scale. Job dissatisfaction was dichotomized as 1 ("rather dissatisfied" and "very dissatisfied") or 0 ("very satisfied", "rather satisfied" and "neutral"). Turnover intention was dichotomized as 1 ("every day", "a few times a week" and "a few times a month") or 0 ("sometimes the last 12 months" and "never").

All three outcomes were assessed from the follow-up data in 2022.

*Potential confounders.* All potential confounders were assessed from baseline data in 2021 and applied with regard to a theoretical standpoint in WLI along with the potential confounders' relation to mental health and perceived work environment.

Potential demographic confounders were sex and family situation (3, 25). Potential confounders concerning work environment included rank (14), working hours per week (3), and working overtime (26). Also, since our survey was collected during the pandemic, which had a significant impact on psychological distress among healthcare workers (6, 27), we also included work with COVID-19 patients as a potential confounder.

Age was omitted as a potential confounder due to its high correlation with rank (Pearson correlation 0.638) but included as a descriptive variable for demographic description.

Categories of the potential confounders can be found in table 1. Reference categories of each confounder for the logistics regression can be found in supplementary tables S2–4.

### Statistical analysis

All analyses were performed using SPSS version 28.0 (IBM Corp, Armonk, NY, USA).

A missing value analysis was performed for all variables utilized in the analysis (supplementary table S4). Missing values percentage ranged from 0.0–2.7%. High risk of burnout in 2021 and 2022 were the only two variables with missing values >1% (1.9% and 2.7%, respectively) and were further analyzed in relation to demographic characteristics showing small differences in missing values: 1–2 percentage units. Missing values for descriptive variables are presented in table 1.

Descriptive summary statistics were used to describe the characteristics of the sample. Frequencies were computed to investigate the prevalence of WLI, high risk of burnout, job dissatisfaction and turnover intention, respectively. In addition, $Chi^2$ ($P<0.05$) and McNemar ($P<0.05$) tests were performed to examine associations in prevalence.

To explore whether WLI is associated with a high risk of burnout, job dissatisfaction and turnover intention, we performed logistic regression analyses for each outcome. Crude models only tested for the specific variable towards each outcome. Model 1 included the exposure of WLI in 2021 as a continuous variable, adjusted for baseline high risk of burnout (continuous), job dissatisfaction (dichotomized) and turnover intention (dichotomized), respectively along with adjustments for potential confounders. Results from the regressions were presented as odds ratios (OR) with 95% confidence intervals (CI) and P-values ($P<0.05$).

**Table 1.** Descriptive characteristics of the sample in baseline 2021 (N=1575).

| Demographics | Total |
|---|---|
| | N (%) |
| Sex | |
| Women | 882 (56) |
| Men | 689 (44) |
| Missing | 0 (0) |
| Age (years) | |
| 27–37 | 410 (26.0) |
| 28–44 | 386 (24.5) |
| 45–55 | 391 (24.8) |
| 56–75 | 388 (24.6) |
| Missing | 0 (0) |
| Family situation | |
| Living alone | 158 (10.0) |
| Living with only children | 70 (4.4) |
| Living with only partner | 388 (24.6) |
| Living with partner and children | 943 (60.0) |
| Missing | 16 (1.0) |
| Rank | |
| Physicians in training | 477 (30.3) |
| Specialist | 641 (40.7) |
| Consultants | 451 (28.6) |
| Missing | 6 (0.4) |
| Experience (years) | |
| <10 | 383 (24.3) |
| 10–15 | 327 (20.8) |
| >15 | 727 (46.2) |
| Missing | 3 (0.2) |
| Working hours per week | |
| <36 | 271 (17.2) |
| 34–45 | 837 (53.1) |
| >45 | 465 (29.6) |
| Missing | 2 (0.1) |
| Working overtime | |
| Rarely | 293 (18.6) |
| Several times/month | 301 (19.1) |
| Several times/week | 972 (61.7) |
| Missing | 8 (0.5) |
| Work with COVID-19 patients | |
| No | 351 (22.3) |
| Some shifts | 350 (22.2) |
| Entire pandemic | 867 (55.0) |
| Missing | 6 (0.4) |

## *Results*

### Demographics

Table 1 describes the characteristics of the analytical sample at baseline. More than half of the study participants were women (56%). Participants were aged 27–75 years, with a mean age of 47 (SD 11.6) years. The majority (60.5%) lived with a partner and children. It was most common to work as a specialist (40.1%). Nearly half of the physicians had >15 years of work experience.

Most physicians worked 34–45 hours per week and over 60% stated that they worked overtime several times per week. More than half of the physicians (55.3%) worked with COVID-19 patients.

### Prevalence of high risk of burnout, job dissatisfaction, turnover intention and WLI in 2021 and 2022

In table 2, the prevalence of WLI, high risk of burnout, job dissatisfaction and turnover intention is presented for each year, including significance levels *between* the categories for each variable in 2021 and significance levels for the change in prevalence between 2021 and 2022.

Regarding prevalence found in table 2, the experience of WLI increased by 3.1 percentage points ($P=0.003$) while high risk of burnout increased by 1.3 percentage units ($P=0.038$) from 2021 to 2022. Although overall job dissatisfaction and turnover intention increased from 2021 to 2022 none were significant ($P>0.05$).

### Associations between WLI and subsequent high burnout risk, job dissatisfaction and turnover intention

Table 3 presents the results for the logistics regression testing the association between WLI and subsequent high burnout risk, job dissatisfaction and turnover inten-

**Table 2.** Prevalence of work-life interference, high risk of burnout, job dissatisfaction and turnover intention, including significance levels between group categories and between years. **Text in bold indicates P-value <0.05**. [Pre=prevalence; OT=overtime.]

| | Work-life interference | | | | High risk of burnout | | | | Job dissatisfaction | | | | Turnover intention | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Prev 2021 (%) | P-value [a] | Prev 2022 (%) | P-value [b] | Prev 2021 (%) | P-value [a] | Prev 2022 (%) | P-value [b] | Prev 2021 (%) | P-value [a] | Prev 2022 (%) | P-value [b] | Prev 2021 (%) | P-value [a] | Prev 2022 (%) | P-value [b] |
| Total | 30.9 | N/A | 34.2 | **0.003** | 4.5 | N/A | 5.8 | **0.038** | 11.1 | N/A | 12.2 | 0.266 | 30.1 | N/A | 32.2 | 0.056 |
| Sex | | | | | | | | | | | | | | | | |
| Men | 26.4 | <0.001 | 30.2 | **0.020** | 4.1 | 0.579 | 5.2 | 0.345 | 10.0 | 0.210 | 11.4 | 0.337 | 28.1 | 0.136 | 31.3 | 0.055 |
| Women | 34.5 | | 37.3 | 0.071 | 4.7 | | 6.3 | 0.082 | 12.0 | | 12.7 | 0.582 | 31.6 | | 32.9 | 0.401 |
| Age (years) | | | | | | | | | | | | | | | | |
| 27–37 | 32.2 | <0.001 | 36.7 | **0.034** | 5.2 | **0.023** | 7.0 | 0.248 | 11.5 | 0.156 | 13.7 | 0.306 | 33.9 | **<0.001** | 38.5 | 0.057 |
| 38–44 | 28.6 | | 34.1 | **0.026** | 4.0 | | 5.0 | 0.523 | 10.9 | | 13.5 | 0.221 | 33.1 | | 38.3 | **0.044** |
| 45–55 | 39.3 | | 41.6 | 0.581 | 6.5 | | 8.5 | 0.230 | 13.6 | | 12.3 | 0.590 | 34.3 | | 34.9 | 0.832 |
| 56–75 | 23.4 | | 24.3 | 0.603 | 2.1 | | 2.7 | 0.754 | 8.5 | | 9.1 | 0.742 | 18.8 | | 16.8 | 0.312 |
| Rank | | | | | | | | | | | | | | | | |
| Consultant | 30.7 | 0.574 | 32.6 | 0.740 | 3.4 | 0.225 | 3.4 | 0.118 | 9.3 | 0.165 | 8.0 | 0.337 | 25.9 | **0.010** | 25.6 | 0.820 |
| Specialist | 29.8 | | 32.8 | 0.275 | 4.3 | | 6.5 | 0.054 | 11.0 | | 13.4 | 0.241 | 29.4 | | 33.4 | 0.202 |
| Physicians in training | 32.8 | | 38.6 | **0.001** | 5.7 | | 7.8 | 0.804 | 13.2 | | 15.2 | 0.219 | 25.9 | | 25.6 | 0.055 |
| Family situation | | | | | | | | | | | | | | | | |
| Living alone | 34.4 | 0.099 | 39.3 | 0.100 | 5.9 | **0.019** | 7.0 | 0.508 | 12.7 | 0.128 | 10.1 | 0.664 | 30.8 | 0.065 | 33.1 | **0.049** |
| Living with only children | 37.7 | | 34.3 | 1.00 | 11.6 | | 10.4 | 1.00 | 18.6 | | 17.6 | 1.00 | 31.4 | | 33.8 | 0.727 |
| Living with only partner | 26.4 | | 30.1 | 0.328 | 3.9 | | 4.0 | 1.00 | 9.3 | | 11.5 | 0.635 | 24.7 | | 25.1 | 1.00 |
| Living with partner and children | 31.7 | | 35.1 | **0.016** | 3.9 | | 5.8 | **0.018** | 11.0 | | 12.2 | 0.338 | 32.1 | | 35.0 | 0.121 |
| Time at work | | | | | | | | | | | | | | | | |
| <36 work hours | 18.5 | <0.001 | 18.8 | 0.280 | 5.7 | 0.092 | 4.7 | 0.424 | 11.5 | 0.209 | 10.8 | 0.874 | 28.5 | **<0.001** | 29.5 | 0.071 |
| 36–45 work hours | 26.0 | | 29.6 | **0.045** | 3.4 | | 5.9 | 0.067 | 9.9 | | 9.8 | 1.00 | 23.3 | | 28.1 | 0.340 |
| >45 work hours | 47.0 | | 50.0 | 0.115 | 5.7 | | 7.7 | 0.700 | 13.1 | | 16.7 | 0.073 | 36.6 | | 38.9 | 0.417 |
| OT - rarely | 12.0 | <0.001 | 15.5 | 0.511 | 3.2 | 0.271 | 2.4 | 0.073 | 3.1 | **<0.001** | 3.6 | 0.503 | 14.8 | **<0.001** | 16.3 | 1.00 |
| OT - sometimes | 22.8 | | 20.2 | 0.233 | 3.7 | | 2.9 | 0.388 | 8.3 | | 6.8 | 0.728 | 18.9 | | 23.1 | **0.009** |
| OT - often | 39.4 | | 46.1 | **0.018** | 5.1 | | 8.1 | 1.00 | 14.6 | | 17.2 | 0.570 | 38.2 | | 41.2 | 0.134 |
| Work with COVID patients | | | | | | | | | | | | | | | | |
| No | 26.4 | 0.101 | 26.0 | 0.532 | 3.8 | 0.728 | 5.0 | 0.145 | 7.4 | **0.041** | 10.8 | 0.082 | 20.7 | **<0.001** | 21.0 | **0.015** |
| Some work shifts | 31.5 | | 33.5 | 0.328 | 5.0 | | 6.5 | 0.359 | 12.3 | | 11.5 | 0.874 | 34.0 | | 34.4 | 0.912 |
| Entire pandemic | 32.6 | | 47.6 | **0.006** | 4.6 | | 5.9 | 0.481 | 12.2 | | 13.0 | 0.533 | 32.2 | | 36.1 | 1.00 |

[a] Between group-categories of 2021.

[b] Between years (2021 vs. 2022) for each category.

tion. For full tables including values for confounders for each specific outcome, see supplementary (tables S2–4).

The results of model 1 (table 3), adjusted for baseline outcome and potential confounders, displayed that higher levels of WLI in 2021 were associated with 1.53 times higher odds of reporting a high risk of burnout (OR 1.53, 95% CI 1.05–2.25), 2.06 times higher odds of reporting job dissatisfaction (OR 2.06, 95% CI 1.68–2.54), and 1.72 times higher odds of reporting turnover intention in 2022 (OR 1.72, 95% CI 1.47–2.00).

## *Discussion*

This paper investigated the association between WLI, high risk of burnout and discontent with work (turnover intention and job dissatisfaction) among physicians in Sweden (2021–2022). This one-year follow-up data reveals that experiencing WLI in 2021 increases the likelihood of reporting a high risk of burnout, job dissatisfaction, and turnover intention in the subsequent year. Thus, our study indicates that WLI may be closely associated with a heightened risk of burnout and work discontent amongst Swedish physicians.

Our findings align with existing literature, which shows that experiences of WLI have been associated with a negative impact on mental health, including burnout and increased work discontent among physicians in other countries (3, 4, 12, 13, 16, 17, 28, 29). Research suggests that reversed causation (30) or reciprocal effects (31, 32) between WLI and health may also exist. It has also been suggested that individuals may become resilient to WLI over time (33). Meanwhile, research providing evidence that WLI is associated with subsequent medically certified sickness absence (18) indicates a negative health spiral. Nevertheless, this negative spiral and any cross-lagged effects should be further explored in our cohort with more data points. Moreover, the direction of effects between WLI and work discontent needs further research.

Data were collected during the COVID-19 pan-

**Table 3.** Associations between experiences of work-life interference in 2021 (per one unit increase) and high risk of burnout, job satisfaction and Turnover intention in 2022, adjusted for potential confounders [a] **Text in italics indicates P-value <0.05**. [OR=odds ratio; CI=confidence interval.]

| | Crude (unadjusted OR) | | Model 1 [a] | | | |
|---|---|---|---|---|---|---|
| | OR (95% CI) | P-value | OR (95% CI) | P-value | N | Nagelkerke R Square |
| High risk of burnout in 2022 | | | | | 1463 | 0.445 |
| Work-life interference 21 [b] | 3.67 (2.78–4.83) | **<0.001** | 1.53 (1.05–2.25) | **0.029** | | |
| High risk of burnout 21 [b] | 19.98 (12.33–32.37) | **<0.001** | 14.53 (8.39–25.16) | **<0.001** | | |
| Job dissatisfaction in 2022 | | | | | 1524 | 0.269 |
| Work-life interference 21 [b] | 2.51 (2.10–2.99) | **<0.001** | 2.06 (1.68–2.54) | **<0.001** | | |
| High job dissatisfaction 21 [c] | 9.51 (6.67–13.58) | **0.001** | 5.82 (3.93–8.64) | **<0.001** | | |
| Turnover intention in 2022 | | | | | 1525 | 0.478 |
| Work-life interference 21 [b] | 2.28 (2.02–2.58) | **<0.001** | 1.72 (1.47–2.00) | **<0.001** | | |
| Turnover intention last day/week/month 21 [c] | 10.45 (8.14–13.42) | **<0.001** | 7.37 (5.61–9.67) | **<0.001** | | |

[a] Adjusted for sex, rank, family situation, time at work (work hours and overtime) and work with COVID-19 patients.
[b] Continuous, scale 1–5.
[c] Dichotomized. Reference: Low dissatisfaction/No turnover intention.

demic, which had a large impact on the workload for some physicians and less on others. For example, due to the necessary focus on COVID-19-related tasks, physicians in surgical specialties were not able to carry out their work as usual (34, 35). Thus, physicians may have been affected by the pandemic regardless of whether they were working with COVID-19 patients or not (34). Therefore, to account for variations in workload and experiences, in addition to adjusting for work hours and overtime hours, we also adjusted for working with COVID-19 patients.

Both a high risk of burnout and work discontent hold critical consequences for the individual and the healthcare services. A high risk of burnout poses a direct threat to an individual's health (36). At the societal level, the experience of having a high risk of burnout and work discontent following WLI may lead to an increased risk of sick leave (18, 19, 36) along with a potential reduction in the quality of care and risks to patient safety (7, 36, 37). These consequences come with a significant loss of competencies and economic costs for society (38). The mounting pressure on healthcare professionals, combined with a global shortage of healthcare workers (7), exacerbates the situation. Balancing work and private life is an ongoing struggle for many workers (17), yet for many, this balance does not affect the lives and health of others. Thus, the improvement of WLI is not just about safeguarding the health and competence of medical staff but in long-term also about the health and wellbeing of the patients.

## Strength and limitations

The longitudinal design of this article is also its major strength. This approach facilitated the adjustments for baseline burnout, job satisfaction and turnover intention in regression analysis, mitigating bidirectionality concerns. While the study benefits from two closely timed data points, it necessitates further investigation for a more extended perspective on the causal relation between WLI and a high risk of burnout as well as work discontent.

A potential weakness could lie in the use of single-item measures for job dissatisfaction and turnover intention, which has been criticized for oversimplifying complex human psychological constructs (39). However, validation studies by Fakunmoju (40) and Dolbier et al (41) found no difference in predictive validity between single items and multiple items when measuring job-related outcomes, especially when examining relatively stable attitudinal variables including the level of satisfaction and turnover intention (40).

Additionally, attrition bias needs to be addressed with regards to the attrition between surveys, essentially if psychosocial and clinical features of the physicians who only completed the baseline survey differ from those answering both baseline and follow. When analyzing the attrition between experiencing WLI and high risk of burnout at baseline with physicians who answered both time points, the mean values were similar, indicating low attrition bias.

Finally, unlike its predecessor such as the Maslach Burnout Inventory (MBI), the BAT offers a validated global burnout score and cut-off values, enhancing comparability across studies (1, 42). The distinction is important as longitudinal studies still need to be comparable between measures, yet many existing studies utilize the MBI (3, 25) or similar measures (4, 12), leading to discrepancies in reported burnout prevalence (1, 23). Thus, our use of the BAT contributes to longitudinal utility facilitating comparisons across different contexts and studies.

## Concluding remarks

This study found that experiences of WLI among Swedish physicians are associated with a subsequent high risk of burnout and discontent with work the following year.

To create healthy and sustainable healthcare, all physicians need to be able to balance their careers with their private lives. Considering our findings and the

consequences of experiencing both a heightened risk of burnout and work discontent, such as negatively affected quality of care and patient safety, additional studies within the Swedish context are needed to study further the role of WLI among healthcare workers and its healthcare outcomes.

### Funding

This article was made possible by funding from the Swedish Research Council for Health, Working Life and Welfare (grant number 2019-00311).

### Competing interests

The authors declare no competing interests.

### Ethics approval and consent to participate.

The Swedish Ethical Review Authority approved the LOHHCS study (2020-06613; 2021-05574-02). All physicians gave their consent when they logged in to the web survey or posted the paper survey.

### Data availability

Due to ethical reasons, the datasets analyzed during the current study are not publicly available but are available from the corresponding author upon reasonable request.

## *Acknowledgements*

We want to thank all the physicians who participated in this study and made this article possible.

## *References*

1. Schaufeli W, De Witte H. Burnout Assessment Tool (BAT): A fresh look at burnout. In: Krägeloh CU, Alyami M, Medvedev ON, editors. International Handbook of Behavioral Health Assessment [Internet]. Cham: Springer International Publishing; 2023 [cited 2023 Aug 22]. p. 1–24. Available from: https://link.springer.com/10.1007/978-3-030-89738-3_54-1.

2. Brulin E, Lidwall U, Seing I, Nyberg A, Landstad B, Sjöström M et al. Healthcare in distress: A survey of mental health problems and the role of gender among nurses and physicians in Sweden. J Affect Disord 2023 Oct;339:104–10. https://doi.org/10.1016/j.jad.2023.07.042

3. Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. Relationship between work-home conflicts and burnout among American surgeons: a comparison by sex. Arch Surg 2011 Feb;146(2):211–7. https://doi.org/10.1001/archsurg.2010.310.

4. Fuss I, Nübling M, Hasselhorn HM, Schwappach D, Rieger MA. Working conditions and Work-Family Conflict in German hospital physicians: psychosocial and organisational predictors and consequences. BMC Public Health 2008 Oct;8(1):353. https://doi.org/10.1186/1471-2458-8-353.

5. Hann M, Reeves D, Sibbald B. Relationships between job satisfaction, intentions to leave family practice and actually leaving among family physicians in England. Eur J Public Health 2011 Aug;21(4):499–503. https://doi.org/10.1093/eurpub/ckq005.

6. Shanafelt TD, West CP, Dyrbye LN, Trockel M, Tutty M, Wang H et al. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians During the First 2 Years of the COVID-19 Pandemic. Mayo Clin Proc 2022 Dec;97(12):2248–58. https://doi.org/10.1016/j.mayocp.2022.09.002.

7. O'Connor DB, Hall LH, Johnson J. Job Strain, Burnout, Wellbeing and Patient Safety in Healthcare Professionals. In: Montgomery A, van der Doef M, Panagopoulou E, Leiter MP, editors. Connecting Healthcare Worker Well-Being, Patient Safety and Organisational Change [Internet]. Cham: Springer International Publishing; 2020 [cited 2023 May 24]. p. 11–23. (Aligning Perspectives on Health, Safety and Well-Being). Available from: https://link.springer.com/10.1007/978-3-030-60998-6_2.

8. Teoh K, Hassard J. Linking Organisational Factors and Patient Care: Does Healthcare Workers' Well-being Matter? In: Montgomery A, van der Doef M, Panagopoulou E, Leiter MP, editors. Connecting Healthcare Worker Well-Being, Patient Safety and Organisational Change [Internet]. Cham: Springer International Publishing; 2020 [cited 2023 Dec 11]. p. 41–57. (Aligning Perspectives on Health, Safety and Well-Being). Available from: https://link.springer.com/10.1007/978-3-030-60998-6_4.

9. Greenhaus J, Beutell NJ. Sources of conflict between work and family roles. Acad Manage Rev 1985;10(1):76–88. https://doi.org/10.2307/258214.

10. Fisher GG, Bulger CA, Smith CS. Beyond work and family: a measure of work/nonwork interference and enhancement. J Occup Health Psychol 2009 Oct;14(4):441–56. https://doi.org/10.1037/a0016737.

11. Brulin E, Elsert Gynning B. En kartläggning av arbetsmiljö och hälsa hos undersköterskor, sjuksköterskor och läkare i den offentliga hälso- och sjukvården [A report of work environment and health among assistant nurses, registered nurses and physicians in Sweden's public healthcare system] [Internet]. Gävle: Myndigheten för arbetsmiljökunskap; 2023 [cited 2023 Dec 12] p. 63. Report No.: 2023:12. Available from: https://mynak.se/wp-content/uploads/2023/11/En-kartlaggning-av-arbetsmiljo-och-halsa-hos-underskoterskor-sjukskoterskor-och-lakare-i-den-offentliga-halso-och-sjukvarden.pdf.

12. Langballe EM, Innstrand ST, Aasland OG, Falkum E. The predictive value of individual factors, work-related

factors, and work–home interaction on burnout in female and male physicians: a longitudinal study. Stress Health 2011;27(1):73–87. https://doi.org/10.1002/smi.1321.

13. Marti AR, Degerud E, Sterud T. Work-life interference and physician-certified sick leave: a prospective study of a general working population. Eur J Public Health 2023 Feb;33(1):69–73. https://doi.org/10.1093/eurpub/ckac149.

14. Røvik JO, Tyssen R, Hem E, Gude T, Ekeberg O, Moum T et al. Job stress in young physicians with an emphasis on the work-home interface: a nine-year, nationwide and longitudinal study of its course and predictors. Ind Health 2007 Oct;45(5):662–71. https://doi.org/10.2486/indhealth.45.662.

15. Hagqvist E, Gådin KG, Nordenmark M. Work–Family Conflict and Well-Being Across Europe: The Role of Gender Context. Soc Indic Res 2017;132(2):785–97. https://doi.org/10.1007/s11205-016-1301-x.

16. Albrecht SC, Kecklund G, Leineweber C. The mediating effect of work-life interference on the relationship between work-time control and depressive and musculoskeletal symptoms. Scand J Work Environ Health 2020 Sep;46(5):469–79. https://doi.org/10.5271/sjweh.3887.

17. Gisler S, Omansky R, Alenick PR, Tumminia AM, Eatough EM, Johnson RC. Work-life conflict and employee health: A review. J Appl Biobehav Res 2018;23(4):e12157. https://doi.org/10.1111/jabr.12157.

18. Hagqvist E, Lidwall U, Leineweber C. Is work-life interference a risk factor for sickness absence? A longitudinal study of the Swedish working population. Eur J Public Health 2022 Jun;32(3):398–401. https://doi.org/10.1093/eurpub/ckac028.

19. Lidwall U, Bill S, Palmer E, Olsson Bohlin C. Mental disorder sick leave in Sweden: A population study. Work 2018;59(2):259–72. https://doi.org/10.3233/WOR-172672.

20. Lidwall U, Marklund S, Voss M. Work-family interference and long-term sickness absence: a longitudinal cohort study. Eur J Public Health 2010 Dec;20(6):676–81. https://doi.org/10.1093/eurpub/ckp201.

21. Mumu JR, Tahmid T, Azad MA. Job satisfaction and intention to quit: A bibliometric review of work-family conflict and research agenda. Appl Nurs Res 2021 Jun;59:151334. https://doi.org/10.1016/j.apnr.2020.151334.

22. Hagqvist E, Ekberg K, Lidwall U, Nyberg A, Landstad BJ, Wilczek A et al. The Swedish HealthPhys Study: Study Description and Prevalence of Clinical Burnout and Major Depression among Physicians. Chronic Stress (Thousand Oaks) 2022 Apr;6:24705470221083866. https://doi.org/10.1177/24705470221083866.

23. Schaufeli WB, Desart S, De Witte H. Burnout Assessment Tool (BAT)-Development, Validity, and Reliability. Int J Environ Res Public Health 2020 Dec;17(24):9495. https://doi.org/10.3390/ijerph17249495.

24. Schaufeli WB, De Witte H, Hakanen JJ, Kaltiainen J, Kok R. How to assess severe burnout? Cutoff points for the Burnout Assessment Tool (BAT) based on three European samples. Scand J Work Environ Health 2023 May;49(4):293–302. https://doi.org/10.5271/sjweh.4093.

25. Shanafelt TD, West CP, Sinsky C, Trockel M, Tutty M, Wang H et al. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians and the General US Working Population Between 2011 and 2020. Mayo Clin Proc 2022 Mar;97(3):491–506. https://doi.org/10.1016/j.mayocp.2021.11.021.

26. Hämmig O, Gutzwiller F, Bauer G. Work-life conflict and associations with work- and nonwork-related factors and with physical and mental health outcomes: a nationally representative cross-sectional study in Switzerland. BMC Public Health 2009 Nov;9(1):435. https://doi.org/10.1186/1471-2458-9-435.

27. Sasaki N, Kuroda R, Tsuno K, Kawakami N. The deterioration of mental health among healthcare workers during the COVID-19 outbreak: A population-based cohort study of workers in Japan. Scand J Work Environ Health 2020 Nov;46(6):639–44. https://doi.org/10.5271/sjweh.3922.

28. Chen IH, Brown R, Bowers BJ, Chang WY. Work-to-family conflict as a mediator of the relationship between job satisfaction and turnover intention. J Adv Nurs 2015 Oct;71(10):2350–63. https://doi.org/10.1111/jan.12706.

29. Frank E, Zhao Z, Fang Y, Rotenstein LS, Sen S, Guille C. Experiences of Work-Family Conflict and Mental Health Symptoms by Gender Among Physician Parents During the COVID-19 Pandemic. JAMA Netw Open 2021 Nov;4(11):e2134315. https://doi.org/10.1001/jamanetworkopen.2021.34315.

30. Tone Innstrand S, Melbye Langballe E, Arild Espnes G, Falkum E. Gjerl∅w Aasland O. Positive and negative work–family interaction and burnout: A longitudinal study of reciprocal relations. Work Stress 2008 Jan;22(1):1–15. https://doi.org/10.1080/02678370801975842.

31. Jensen MT. A two wave cross-lagged study of work-role conflict, work-family conflict and emotional exhaustion. Scand J Psychol 2016 Dec;57(6):591–600. . https://doi.org/10.1111/sjop.12328.

32. Bergs Y, Hoofs H, Kant I, Slangen J, Jansen NW. Work-family conflict and depressive complaints among Dutch employees: examining reciprocal associations in a longitudinal study. Scand J Work Environ Health 2018 Jan;44(1):69–79. https://doi.org/10.5271/sjweh.3658.

33. Germeys L, Leineweber C. Divergent concurrent and lagged effects of the reciprocal relation between work-nonwork interactions and sleep disturbance [Internet]. Sleep 2019 Mar;42(3):zsy255. [cited 2024 Apr 12] Available from: https://academic.oup.com/sleep/article/doi/10.1093/sleep/zsy255/5250902. https://doi.org/10.1093/sleep/zsy255.

34. Nilsson K, Landstad BJ, Ekberg K, Nyberg A, Sjöström M, Hagqvist E. Physicians' experiences of challenges in working conditions related to the provision of care during the initial response to the COVID-19 pandemic in Sweden. Int J Health Gov 2022 Jan;27(3):254–67. https://doi.org/10.1108/IJHG-01-2022-0015.

35. Härgestam M, Jacobsson M, Bååthe F, Brulin E. Challenges in preserving the "good doctor" norm: physicians' discourses on changes to the medical logic during the initial wave of the COVID-19 pandemic. Front Psychol 2023 Jun;14:1083047. https://doi.org/10.3389/fpsyg.2023.1083047.

36. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB. Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. Harris F, editor. PLOS ONE. 2016;11(7):e0159015.

37. Salyers MP, Bonfils KA, Luther L, Firmin RL, White DA, Adams EL et al. The Relationship Between Professional Burnout and Quality and Safety in Healthcare: A Meta-Analysis. J Gen Intern Med 2017 Apr;32(4):475–82. https://doi.org/10.1007/s11606-016-3886-9.

38. Hassard J, Teoh KR, Visockaite G, Dewe P, Cox T. The cost of work-related stress to society: A systematic review. J Occup Health Psychol 2018 Jan;23(1):1–17. https://doi.org/10.1037/ocp0000069.

39. Allen MS, Iliescu D, Greiff S. Single item measures in psychological science: A call to action. Eur J Psychol Assess 2022;38(1):1–5. https://doi.org/10.1027/1015-5759/a000699.

40. Fakunmoju SB. Validity of Single-item Versus Multiple-item Job Satisfaction Measures in Predicting Life: Satisfaction and Turnover Intention. Asia-Pac J Manag Res Innov 2020 Sep;16(3):210–28. https://doi.org/10.1177/2319510X21997724.

41. Dolbier CL, Webster JA, McCalister KT, Mallon MW, Steinhardt MA. Reliability and validity of a single-item measure of job satisfaction. Am J Health Promot 2005;19(3):194–8. https://doi.org/10.4278/0890-1171-19.3.194.

42. De Beer LT, Hakanen JJ, Schaufeli WB, De Witte H, Glaser J, Kaltiainen J et al. The burnout-depression conundrum: investigating construct-relevant multidimensionality across four countries and four patient samples. Psychol Health 2024 Feb:1–28. https://doi.org/10.1080/08870446.2024.2321358.

Received for publication: 10 January 2024