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What alleviates the harmful effect of strain on recovery from work of 4478 health and social services workers? A cross-sectional study

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Abstract

Aim: To analyse whether the harmful effect of job demands on recovery can be alleviated by healthy lifestyle, psychological recovery experiences and job resources. We also describe their prevalence among employees in different types of eldercare service and in the health and social services sector in general.

Design: Cross-sectional study.

Methods: The data were collected using a self-report survey in 2020 in the health and social services sector organizations ($n = 4478$). Employees were classified as the following service types: general health and social services ($N = 3225$), home care ($N = 452$), service housing ($N = 550$) and outpatient and ward care ($N = 202$). The data were analysed using percentages, cross-tabulations and logistic regression analysis.

Results: Poor recovery, high job demands, low appreciation and low autonomy in terms of worktime and breaks were more prevalent in eldercare. Employers could alleviate the risk of high job demands by offering job resources—appreciation, autonomy in terms of worktimes and breaks—and motivating employees to maintain healthy lifestyle habits and use recovery experiences such as relaxation.

Conclusion: The study emphasizes the importance of appreciation in the health and social services sector context. Even with moderate levels of appreciation employers can protect employees from poor recovery from work in the demanding health and social services work environment.

Impact: Eldercare employees face continuous and accumulating work strain at the same time as the sector struggles against a labour shortage. One way to prevent the harmful consequences of strain is to enhance recovery from work.

Employers could alleviate the risk of high job demands and poor recovery by showing appreciation and giving employees more autonomy in terms of work time and breaks during the workday. This could also motivate employees to keep up healthy lifestyle habits and use their recovery experiences. Results are important especially in the daily management of HSS work.

What Does this Paper Contribute to the wider Global Clinical Community? Managers in the health and social services sector and eldercare can use these findings to promote recovery from work.

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KEYWORDS
management, occupational health, recovery from work

1 | INTRODUCTION

Lengthening the work careers of health and social services (HSS) professionals and reducing their numbers of sickness absence days are challenges that need to be overcome in the struggle against the HSS labour shortage. A lack of employees means that the work is done by a minimal amount of personnel, and every sickness absence day means extra work and strain for employees at work. This situation will only get worse in coming years, as the number of elderly people increases and the number of young people entering the work life decreases. Thus, all means are urgently needed to address the labour shortage, prevent HSS workers' intentions to quit work (Biegger et al., 2016) and improve the attractiveness of the HSS as an employer so that employees are willing to work and have sustainable work careers in the HSS sector in the future (Van Aerschot et al., 2021).

One major push factor from the HSS sector workforce is the continuous, accumulating work strain, which reduces work ability and causes premature work disability (Amiri & Behnezhad, 2020; Selander et al., 2022). Therefore, means are needed to decrease work strain and to help employees recover from highly demanding work. Recovery from work means refilling depleted resources (Sonnentag et al., 2022; Steed et al., 2021) and is a way to prevent the harmful consequences of strain on health (Sluiter et al., 1999). In this study, we analysed the ways in which HSS employers enhance recovery from work already during the workday and during leisure time. We focused especially on eldercare, in which recovery from work is at a lower level than elsewhere in the HSS (Selander et al., 2023).

2 | BACKGROUND

Previous recovery research has focused on individual skills such as recovery-enhancing activities such as sleep, physical activity and psychological recovery experiences during leisure time (Karabinski et al., 2021; Sonnentag et al., 2022). The quality of sleep and physical activity (de Vries et al., 2017; Lidegaard et al., 2018) has been associated with lower fatigue levels and better recovery from work. When the body, mind and brains are working, they may be strained, but preventing the accumulation and continuation of such stress is the key factor to avoiding adverse health consequences such as mental distress, musculoskeletal diseases or cardiovascular diseases or even stroke, which are the leading causes of work disability in the HSS (Ruotsalainen et al., 2015; Virtanen et al., 2018). In HSS eldercare, most employees do shift work, which is a risk factor for health and recovery from work (Jansen et al., 2003). Shift work increases the risk of sleep problems (Hernandez et al., 2022) and unhealthy behaviours (Nea et al., 2015).

Healthy lifestyles can also increase psychological recovery experiences, which include processes that help the mind and body slow down and stress levels return to baseline level (Sonnentag et al., 2022). These experiences include detachment from work (letting go of work-related thoughts), relaxation (low level of mental or physical activation and little physical or intellectual effort), control (being able to decide one's own schedules and activities), mastery (learning opportunities and challenges that result in feelings of achievement and competence), meaning (meaningful activities help achieving purpose in life) and affiliation (social support, which helps workers cope with stressful events) (Newman et al., 2014; Sonnentag & Fritz, 2007). Psychological recovery experiences are widely studied individuals' skills to enhance recovery from work, but there is a gap in research in terms of whether job resources alleviate poor recovery from work if individual factors are simultaneously taken into account.

Job resources are part of the motivation process and important in alleviating job strain (Demerouti et al., 2001). They are features of the work environment that contribute to personal growth and development, helping employees achieve work goals. This in turn increases motivation and results in positive health outcomes. For example, job control and autonomy in their work enables employees to plan their work tasks, giving them a sense of mastery and resulting in better recovery from work. Work control, opportunities to take breaks at work and ergonomic shift work scheduling support the recovery of HSS employees (Blasche et al., 2017; Sagherian et al., 2021).

Rewards, especially appreciation, are also important in the motivation process. These include wages and esteem, feedback and respect (Siegrist et al., 2009). An important job resource is the employee's experience of meaningful and rewarding work, and recognition of and feedback on it. (Langseth-Eide & Vittersø, 2021). In Finland, pay is negotiated with labour market organizations; hence, the opportunities for HSS managers and work units to influence monetary compensation are limited. Instead, they can have a

substantial impact on the workplace climate as well as the sense of appreciation and esteem, which is the focus of our research.

Although recent research has provided evidence of factors associated with recovery, it has usually concentrated on only one aspect—studies have analysed health habits, psychological recovery from work or concentrated on work-related factors only. To our knowledge, these factors have not been analysed together in the eldercare setting, in which many work stressors are emphasized (Selander et al., 2022). Neither, to our knowledge, does any information exist on the prevalence of poor recovery from work among HSS workers. This information is important for tailoring measures for risk groups because poor recovery from work can be a high risk of poor work ability. Given the growing need of HSS workers, more means are needed in HSS organizations to sustain work careers and promote work ability and recovery from work in HSS settings.

3 | THE STUDY

3.1 | Aims

The aim was to study whether the harmful effect of work demands on recovery from work can be alleviated by (1) a healthy lifestyle, (2) psychological recovery experiences and (3) job resources. We also describe the prevalence of healthy lifestyles, psychological recovery experiences and job resources among employees in different eldercare service types and general HSS.

4 | METHODS

4.1 | Design

This cross-sectional study examined a sub-study of a Finnish HSS employees' work well-being survey conducted every year.

4.2 | Sample

The work well-being survey is conducted in Finnish HSS organizations annually between October and November. Each year the participating organizations are selected on the basis of on their own interest. For this study, we used data from 2020 with nine participating organizations and the convenience sampling method. All employees who were actively working in the study organizations were recruited to take part in an electronic survey. Of the invited employees, 67% responded and 22,502 gave their consent for their data to be used in scientific research. Our analysis included only those organizations and their employees who answered additional questions on recovery from work and health habits ($n = 4478$). Based on the work unit names, the employees were further classified into general HSS ($N = 3225$) and eldercare consisting of home care ($N = 452$), service housing ($N = 550$) and outpatient and ward care ($N = 202$).[1] Eldercare included all work units in which work involves close contact with the elderly, including immediate superiors. Administrative work, top management, and all other work units were included in the general HSS.

4.3 | Variables and measurements

4.3.1 | Outcome variable

To measure recovery from work, we applied the single-item recovery scale of Kinnunen et al. (2011). This has shown to correlate with potential antecedents in similar way as the longer need for recovery scale (Kinnunen et al., 2011). Respondents were asked to assess whether they recover from the strain caused by the workday before the next day on a scale from 0 (not at all) to 10 (completely). For the analysis, we set the lowest decile (<3) as poor recovery from work.

4.3.2 | Predictor variables

Job demands were measured using two questions from the Job Content Questionnaire (JCQ) (Karasek & Theorell, 1990): "I am required to do an unreasonable amount of work" and "I don't have enough time to get my work done" with five-level response scale (1 = strongly disagree to 5 = strongly agree). For the analysis, we formed the sum variable of these items (Cronbach alpha = 0.88) and categorized it into three groups: low (response options from 1 to 4), moderate (response options from 5 to 6) and high (response options from 7 to 10).

Healthy lifestyle includes physical activity and sleep disturbances. Physical activity was measured in metabolic equivalent task (MET) hours (Ainsworth et al., 2011). The respondents were asked to estimate their average weekly hours of physical activity over the previous year in walking, brisk walking, jogging and running, or activities of equivalent intensities using a five-item scale (1 = no activity, 5 = 4 h or more). Following earlier work by Leskinen et al. (2018), the volume of physical activity was quantified as MET-hours per week and categorized as follows: no physical activity (<7 MET h/week), low (7–13 MET h/week), decent (14–29 MET h/week), high (30–59 MET h/week) and extremely high (≥60 MET h/week).

For sleep disturbances, we used the Jenkins Sleep Scale (Jenkins et al., 1988; Juhola et al., 2021). It asks respondents to evaluate four common sleep problems over the last month: difficulty falling asleep, waking up at night, difficulty staying asleep and non-restorative sleep (0 = never, 5 = almost every night). The total score is a simple sum of these variables (Cronbach alpha = 0.85), in which 12 or more is considered a high frequency of sleep disturbances (Jenkins et al., 1988). For the analysis, we divided sleep disturbances into four groups: low (sleep disturbances 0–8 points), moderate (9–11 points), high (12–15 points) and extremely high (16 or more).

Recovery experiences were a modified version of the Recovery Experience Questionnaire (REQ) developed by Sonnentag and

Fritz (2007) and validated in Finland by Kinnunen et al. (2011). It consists of six items: detachment from work (e.g., I forget about work), relaxation (I kick back and relax), control (I feel that I can decide for myself what to do) and mastery (I try to learn new things) and a five-item response scale (1 = totally disagree to 5 = totally agree). For the analysis, we formed a sum variable of the items (Cronbach alpha = 0.86) and divided it into three groups: low (recovery experiences 4–21 points), moderate (22–25 points) and high (26–30 points).

Job resources include job control, appreciation, worktime autonomy and autonomy in breaks during working hours. Job control was measured in the survey using two items from the JCQ (Karasek & Theorell, 1990): My job involves a lot of similar repetitive tasks (scale inverted) and "I have lot of say in my own work" with a five-level response scale (1 = strongly disagree to 5 = strongly agree). Since the consistent validity of these items was low (Cronbach alpha = 0.34), we used only the latter in the analysis, divided into three groups: low (response options 1 and 2), moderate (response option 3) and high (response options 4 and 5).

Appreciation was a modified version from the effort scale developed by Siegrist et al. (2009) and included two items: how much value you get from your work as (a) appreciation and recognition and (b) as personal satisfaction, with a five-item response scale (1 = not at all to 5 = very much). For the analysis, we formed a sum variable of items (Cronbach alpha = 0.71) and divided it into three groups: low (appreciation 1–4 points), moderate (5–6 points) and high (7–10 points).

Worktime autonomy and autonomy on breaks during work hours were modified versions of the standard survey instrument of Statistics Finland (Lehto, 1991). Respondents were asked to rate on a five-item response scale (1 = not at all, 5 = very much) how much they are able to influence the following aspects of their working hours: (a) length of working day, (b) the starting and ending times of working day, (c) shift arrangements and (d) breaks. Workhour autonomy was formed from a sum variable of the three first statements (Cronbach alpha = 0.87), whereas autonomy on breaks during working hours also included the last one. For the analysis, worktime autonomy was categorized into three groups: low (working hour autonomy 1–4 points), moderate (5–8 points) and high (9–10 points). Autonomy on breaks during working hours was divided into two categories: low (response options 1 = not at all and 2 = very little) and average (response options from 3 to 5).

4.3.3 | Background variables

Service type (general HSS, home care, service housing, outpatient and ward care), gender (males, females), age (>30, 30–39, 40–49, 50 or more), having children (yes, no), supervisory position (yes, no), occupation (practical nurse, nurse, social workers and counsellor, other HSS occupations), perceived health (good, fairly good, average, fairly poor, poor) and shift work (yes, no). Health was considered good if it was rated as good or fairly good.

4.4 | Ethical considerations

The study was approved by the ethical board of the Finnish Institute of Occupational Health (ETR 7/2020). Participation was voluntary and participants provided consent to the use of their data in scientific research.

4.5 | Data-analysis

First, we used descriptive statistics (percentages and cross-tabulations with chi-square tests) to describe the prevalence of healthy lifestyles, psychological recovery experiences and job resources among employees in different eldercare service types and general HSS. Second, we used logistic regression analysis to study whether the harmful effects of job demands on recovery from work can be alleviated by healthy lifestyle, psychological recovery experiences and job resources. The correlation matrix served as a diagnostic tool to identify multicollinearity before regression analysis. Since high correlations were not detected between dependent variables (highest between shift work and worktime autonomy $r = -0.52$, others less than 0.4), all potential predictors were entered into the model. Dependent variables were entered stepwise, using the enter method to show whether the association between job demands and recovery from work changed after other variables were added to the model. In the first step, we included background variables (service type, gender, age, having children, supervisory position, occupation, shift work, perceived health) and job demands. In the second step, we included lifestyle factors (physical activity and sleep disturbances) and in the third, recovery experiences. Job resources (job control, appreciation, worktime autonomy, autonomy on breaks during work hours) were included in the final step. We chose logistic regression analysis as we were specifically interested in poor recovery—not recovery in general. We also used categorized dependent variables instead of continuous variables because we wanted to examine whether the association with poor recovery was linear. All analyses were performed using IBM SPSS version 27.0, and statistical significance was determined as $p < .05$.

5 | RESULTS

As shown in Table 1, our study sample consisted of 4478 HSS employees from four service types: general HSS (3225), home care (452), service housing (550) and outpatient and ward care (202). All the service types were dominated by middle-aged females without children and working in non-supervisory positions. However, in eldercare service, these characteristics were even more pronounced. Also, occupational structures differed. In home care and service housing, most employees were practical nurses (roughly 85%), whereas in outpatient and ward care, practical nurses represented half of the workforce and in general HSS only 14%.

TABLE 1 Characteristics of included variables in different HSS service types.

	General HSS (%)	Home care (%)	Service housing (%)	Outpatient and ward care (%)
Poor recovery ($\chi^2 = 24.68$, $p < .001$)	10	13	16	10
Females ($\chi^2 = 131.90$, $p < .001$)	81	95	95	93
Age ($\chi^2 = 65.97$, $p < .001$)				
<30 years	10	12	12	9
30–39	25	16	14	17
40–49	25	27	21	26
50-	40	45	53	48
No children ($\chi^2 = 20.25$, $p < .001$)	53	57	63	58
Supervisory position ($\chi^2 = 34.28$, $p < .001$)	9	4	4	5
Occupation ($\chi^2 = 1752.57$, $p < .001$)				
Practical nurse	14	85	84	47
Nurse	36	12	10	45
Social workers and counsellors	16	0	0	0
Other HSS occupations	34	2	5	9
Good perceived health ($\chi^2 = 55.13$, $p < .001$)	78	70	65	73
Shift work ($\chi^2 = 914.66$, $p < .001$)	37	85	91	90
Job demands ($\chi^2 = 61.42$, $p < .001$)				
Low job demands	40	30	29	25
Moderate job demands	24	27	22	33
High job demands	36	43	49	42
Physical activity ($\chi^2 = 122.23$, $p < .001$)				
No physical activity (<7 MET h/week)	8	19	17	16
Low physical activity (7–13 MET h/week)	11	12	14	13
Decent (14–29 MET h/week)	29	30	33	29
High physical activity (30–59 MET h/week)	34	31	27	31
Extremely high physical activity (>60 MET h/week)	18	8	9	13
Sleep disturbances ($\chi^2 = 33.44$, $p < .001$)	0	0	0	0
Low sleep disturbances (0–8 points)	33	32	30	25
Moderate sleep disturbances (9–11 points)	20	20	16	20
High sleep disturbances (12–15 points)	25	22	23	27
Extremely high, over 16 points	22	27	31	28
Recovery experiences ($\chi^2 = 10.56$, $p = .103$)				
Low	32	35	32	32
Moderate	37	41	37	32
High	31	25	31	36
Job control ($\chi^2 = 74.61$, $p < .001$)				
Low job control	35	41	39	30
Moderate job control	23	32	32	31
High job control	42	27	29	29
Appreciation ($\chi^2 = 32.00$, $p < .001$)				
Low appreciation	19	21	26	25
Moderate appreciation	45	47	48	48
High appreciation	36	32	26	27

(Continues)

TABLE 1 (Continued)

	General HSS (%)	Home care (%)	Service housing (%)	Outpatient and ward care (%)
Worktime autonomy ($\chi^2 = 328.06$, $p < .001$)				
Low worktime autonomy	19	31	34	28
Moderate worktime autonomy	42	57	56	61
High worktime autonomy	39	12	10	11
Autonomy on breaks ($\chi^2 = 43.21$, $p < .001$)				
Not at all/low	19	32	23	26
High or moderate autonomy on breaks	81	68	77	74
N	3263	452	550	202

The proportion of those with poor recovery from work was greater in service housing (16%) and home care (13%) than in general HSS (10%) or outpatient and ward care (10%) ($\chi^2 = 24.68$, $p < .001$). Also, greater proportions of poor health, shift work and high job demands were more common among employees in different eldercare service types than in general HSS. At the same time a greater proportion of employees in eldercare service types were physically inactive, had extremely high sleep disturbances, had less control over their work, received less appreciation and had less autonomy over worktime and breaks. There were no differences in the proportions of those who with psychological recovery experiences between different service types. (See Table 1).

5.1 | Factors associated with poor recovery from work

Table 2 shows the associations between dependent variables and poor recovery from work based on logistic regression analyses. In the first step, service type, gender, having children or supervisory position were not associated with poor recovery from work after job demands were adjusted for. Young employees and those in shift work had higher odds of poor recovery, but these differences disappeared in the later steps. Differences between age groups disappeared in the third step after recovery experiences were included in the model. Differences between shift and day workers disappeared after job resources were included. Of the occupations, only nurses had higher odds of poor recovery after background variables, lifestyle habits, recovery experiences and job resources were controlled for.

The analysis showed that the more employees encountered job demands, the higher their odds ratio was for poor work recovery. This negative association, however, can be alleviated by the employees themselves with health habits and recovery experiences and by the employers with job resources, as can be seen in steps 3–5 (see Table 2). Of the individual factors, sleep disturbances and recovery experiences were negatively associated with poor recovery from work. The odds for poor recovery from work increased quite linearly with sleep disturbance points. The use of recovery experiences in turn decreased the risk of poor recovery. Physical activity was not associated with poor recovery after other variables were adjusted for.

Of the job resources, appreciation and autonomy over worktime and breaks were negatively associated with poor recovery. Furthermore, the associations were not linear as with job demands and sleep disturbances. Even a moderate level of appreciation and worktime autonomy protected employees from poor recovery from work approximately as much as at high levels as at low levels of appreciation or worktime autonomy. This indicates that even with moderate job resources, employers can protect employees from poor recovery from work in the demanding HSS working environment. Job control, in turn, was not associated with poor recovery from work after other job resources were controlled for.

6 | DISCUSSION

Our results show that appreciation of work and autonomy over worktimes and breaks are job resources that can alleviate the negative association between high job demands and poor recovery from work, after healthy lifestyle habits and use of recovery experiences are taken into account. This is a novel finding, as most previous studies have concentrated on either individual coping skills or certain job resources, but as far as we know these have not been analysed together. Our results indicate that measures are needed, especially in home care and service housing where job demands are high, and shift work exposes employees to poor recovery. We suggest that appreciation of work, autonomy over worktimes and breaks are workplace-level means with which to improve recovery from work and thus increase work well-being among HSS workers. This is important in HSS organizations which suffer from a labour shortage that strains employees and thus challenges recovery from work (Amiri & Behnezhad, 2020). Due to these labour shortages, it is difficult to eliminate or even reduce work strain, and therefore, more means at the workplace level are needed to alleviate the harmful effects of strain.

Our results showed that already at moderate levels, appreciation was negatively associated with poor recovery from work, and as part of other job resources, it might have helped employees cope with high job demands. To our knowledge, this is a novel finding in the

TABLE 2 Factors associated with poor recovery from work.

	Step1			Step2			Step3			Step4		
	OR	95% OR	*p*-value	OR	95% OR	*p*-value	OR	95% OR	*p*-value	OR	95% OR	*p*-value
Service type (ref. = other HSS employees)												
Home care	1.02	0.68–1.53	.934	1.02	0.67–1.55	.947	1.00	0.65–1.52	.981	1.23	0.80–1.90	.362
Service housing	1.06	0.73–1.53	.780	1.01	0.68–1.49	.975	1.06	0.71–1.56	.789	1.22	0.81–1.86	.345
Outpatient and ward care	0.69	0.41–1.17	.165	0.63	0.36–1.08	.091	0.68	0.39–1.17	.160	0.69	0.39–1.25	.220
Gender (ref. = males)	0.77	0.55–1.07	.117	0.74	0.53–1.05	.091	0.73	0.52–1.04	.076	0.89	0.61–1.30	.552
Age (ref. Less than 30 years)												
30–39	0.83	0.55–1.26	.378	0.82	0.54–1.25	.345	0.84	0.55–1.29	.420	0.78	0.49–1.23	.280
40–49	0.85	0.57–1.28	.431	0.83	0.54–1.25	.361	0.90	0.59–1.38	.629	0.83	0.53–1.31	.417
50-	0.65	0.45–0.94	.022	0.63	0.43–0.92	.016	0.70	0.47–1.03	.068	0.68	0.45–1.03	.067
Having children (ref. = yes)	0.84	0.64–1.09	.189	0.82	0.62–1.07	.142	0.92	0.70–1.22	.580	0.92	0.69–1.24	.592
Supervisory position (ref. = yes)	0.75	0.42–1.33	.330	0.69	0.39–1.24	.218	0.80	0.44–1.44	.455	0.54	0.29–1.02	.059
Occupation (ref. = other HSS occupations)												
Practical nurse	1.54	1.00–2.38	.055	1.57	1.00–2.45	.051	1.56	1.00–2.46	.054	1.33	0.82–2.16	.255
Nurse	2.02	1.39–2.95	<.001	2.04	1.39–3.00	<.001	1.99	1.35–2.93	.001	1.67	1.10–2.55	.017
Social workers and counsellors	0.93	0.55–1.58	.784	0.90	0.53–1.54	.701	0.91	0.53–1.56	.732	0.97	0.55–1.71	.908
Shift work (ref. = no)	1.49	1.13–1.96	.005	1.45	1.09–1.93	.011	1.48	1.11–1.98	.008	1.07	0.77–1.49	.701
Perceived health (ref. = good)	3.31	2.63–4.16	<.001	2.26	1.76–2.89	<.001	2.02	1.57–2.59	<.001	2.05	1.57–2.68	<.001
Job demands (ref. = low)												
Moderate job demands	2.02	1.33–3.07	.001	1.82	1.19–2.78	.005	1.64	1.07–2.52	.022	1.51	0.97–2.36	.067
High job demands	7.33	5.16–10.43	<.001	6.09	4.26–8.69	<.001	5.27	3.68–7.56	<.001	3.99	2.73–5.85	<.001
Physical activity (ref. = decent 14–29 MET h/week)												
No physical activity (<7 MET h/week)				1.07	0.74–1.56	.706	1.01	0.69–1.46	.974	1.02	0.69–1.51	.922
Low physical activity (7–13 MET h/week)				1.29	0.89–1.87	.183	1.21	0.83–1.75	.331	1.21	0.81–1.80	.356
High physical activity (30–59 MET h/week)				0.98	0.73–1.30	.888	1.03	0.77–1.38	.852	0.97	0.72–1.32	.865
Extremely high physical activity (>60 MET h/week)				1.06	0.73–1.53	.763	1.20	0.82–1.75	.342	1.22	0.82–1.83	.322
Sleep disturbances (ref. = extremely high, over 16 points)												
Low sleep disturbances (0–8 points)				0.18	0.12–0.26	<.001	0.23	0.16–0.34	<.001	0.26	0.18–0.39	<.001
Moderate sleep disturbances (9–11 points)				0.34	0.24–0.47	<.001	0.40	0.28–0.56	<.001	0.48	0.33–0.68	<.001
High sleep disturbances (12–15 points)				0.48	0.37–0.64	<.001	0.52	0.40–0.69	<.001	0.60	0.45–0.80	.001
Recovery experiences (ref. = low)												
Moderate							0.51	0.40–0.66	<.001	0.64	0.49–0.84	.001
High							0.33	0.23–0.48	<.001	0.41	0.28–0.61	<.001
Job control (ref. = low)												
Moderate job control										0.76	0.55–1.05	.100

(Continues)

TABLE 2 (Continued)

	Step1			Step2			Step3			Step4		
	OR	95% OR	*p*-value	OR	95% OR	*p*-value	OR	95% OR	*p*-value	OR	95% OR	*p*-value
High job control										1.23	0.88–1.72	.230
Appreciation (ref. = low)												
Moderate appreciation										0.24	0.19–0.32	<.001
High appreciation										0.20	0.14–0.30	<.001
Worktime autonomy (ref. = low)												
Moderate worktime autonomy										0.59	0.45–0.78	<.001
High worktime autonomy										0.51	0.33–0.80	.004
Autonomy on breaks (ref. = low/not at all)												
High or moderate autonomy on breaks										0.66	0.51–0.86	.002
Khii^2 (df)	449.77 (16)***			561.61 (23)***			610.43 (25)***			816.30 (32)***		
Nagelkerke R^2	0.22			0.27			0.29			0.38		

HSS context. Recognition and appreciation of work can make work more meaningful and thus help employees endure a strenuous work environment. These are beneficial ways to support recovery from work among HSS workers because they are interactive. Therefore, the importance and application of appreciation in day-to-day elderly care work should be emphasized early on in supervisor training.

All the eldercare employees reported lower worktime autonomy than the employees in general HSS, and especially in home care, being able to influence breaks was less prevalent than in the other service types. Autonomy in terms of worktimes and breaks was negatively associated with poor recovery from work, giving support to results of previous studies of HSS employees (Blasche et al., 2017; Gifkins et al., 2020). Breaks during the workday enable recovery already during the workday (Gifkins et al., 2020), and autonomy in terms of worktimes helps employees balance work and family time (Karhula et al., 2020). Thus, especially in eldercare more attention should be paid to shift scheduling, autonomy regarding worktimes, and enabling decent breaks during the workday. In the eldercare setting, however, this may be difficult since employees have only limited control and autonomy over their work, and thus, for example break interventions have had only limited impact on break behaviour (Blasche et al., 2021). Therefore, interventions should be integrated in the daily routines in order to be more effective (Shiri, Nikunlaakso, & Laitinen, 2023) and special attention is needed from HSS managers. In service housing and wards, breaks can be made possible by, for example, working in pairs which enables one to substitute the other during the break. In home care, however, employees have little power to influence their own work schedules as the work is mostly done alone and involves moving from one elderly person's home to another with tight timetables. Therefore, breaks must be anticipated when planning shifts and customer visits and enough leeway should be ensured between the visits.

Our results indicate that HSS employers can alleviate the harmful effect of strain on recovery from work by helping employees maintain healthy lifestyles and motivating them to use psychological recovery experiences. According to earlier studies psychological interventions using for example relaxation, emotion regulation and mindfulness can support own resilience of nursing stuff in their demanding work (Han & Yeun, 2023; Kunzler et al., 2022). Of the lifestyle factors, sleep disturbances in particular had a strong positive association with poor recovery from work. No association, however, was found with physical activity. This finding is in accordance with previous findings of Kinnunen and Mäkikangas (2023), who argued that detachment from work and good sleep are more important for recovery processes than physical activity. Physical activity supports good sleep (Wang & Boros, 2019) and, thus, may have an indirect effect, improving recovery from work. Support for maintaining a healthy lifestyle would be highly beneficial in eldercare, where shift work is more common than elsewhere in the HSS. Shift work is a risk factor for health (Gifkins et al., 2020), making it more difficult to obtain healthy lifestyle (Nea et al., 2015). Our results, however, indicate that employers can alleviate the risk of high job demands with appreciation and job autonomy. This is in the line with the results of previous studies, which have shown that negative health consequences can be alleviated by, for example, ergonomic shift scheduling (Shiri, Turunen, et al., 2023).

6.1 | Limitations

Some limitations should be considered when interpreting these results. Despite the large number of participants, the use of convenience sampling may limit the generalizability of the results. Thus, random sampling methods should be used in future studies. Furthermore, while measurements were previously used and mostly

validated, relying solely on self-reported measurements may have introduced bias to the results. Additionally, the cross-sectional study design precludes drawing conclusions about causality, emphasizing the need for longitudinal and intervention design in the future. Last, while current analysis treated predictors as independent variables, future research could adopt a more nuanced approach to uncover personal, occupational and work-related profiles to account for their potential interdependencies. With more advanced analytical techniques such as latent profile analysis, it would be possible to find more nuanced recovery processes specific to different employee groups (e.g. shift workers) and produce information to contribute to the development of evidence-based interventions to support employees' recovery from work.

7 | CONCLUSIONS

This study indicates that poor recovery is most prevalent in home care and service housing, where job demands are high and a greater number of employees do shift work than in general HSS. Employers could alleviate the risk of high job demands and shift work by offering job resources—appreciation, autonomy in terms of worktimes and break—and motivating employees to keep up healthy lifestyle habits and to use recovery experiences. This study enriches previous recovery studies by pointing out the importance of appreciation in the HSS context. In this regard, future intervention studies should analyse the impact of appreciation on recovery, and ultimately on work ability and job retention.

From a practical perspective, the results indicate that appreciation is crucial in the everyday management of employees, as is being able to participate in shift planning and to have breaks during the workday. Furthermore, the employer can encourage employees to maintain healthy lifestyles and to use psychological recovery experiences in order to recover from highly stressful HSS work. By training supervisors, HSS managers can further ensure that supervisors themselves have sufficient competence to support employees' recovery from work.

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CONFLICT OF INTEREST STATEMENT

All the authors declare no conflicts of interest.

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.16215.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Data utilized in the submitted manuscript have been lawfully acquired. The study was approved by the ethical board of the Finnish Institute of Occupational Health. Participation was voluntary and participants provided consent to the use of their data in scientific research.

The authors have checked to make sure that our submission conforms as applicable to the Journal's statistical guidelines.

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ENDNOTE

[1] The main goal of eldercare services in Finland is to help elderly people live in their own homes for as long as possible, where they are provided with the care they need (home care). Elderly people who need more support than can be provided in their own home are eligible for residence in assisted living facilities with 24-hour care. Outpatient and ward care includes institutional care in hospital wards and policlinics and is provided for medical or safety reasons.

REFERENCES

Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., Meckes, N., Bassett, D. R., Jr., Tudor-Locke, C., Greer, J. L., Vezina, J., Whitt-Glover, M. C., & Leon, A. S. (2011). 2011 compendium of physical activities: A second update of codes and MET values. *Medicine and Science in Sports and Exercise*, *43*(8), 1575–1581. https://doi.org/10.1249/MSS.0b013e31821ece12

Amiri, S., & Behnezhad, S. (2020). Association between job strain and sick leave: A systematic review and meta-analysis of prospective cohort studies. *Public Health*, *185*, 235–242. https://doi.org/10.1016/j.puhe.2020.05.023

Biegger, A., De Geest, S., Schubert, M., & Auserhofer, D. (2016). The 'magnetic forces' of Swiss acute care hospitals: A secondary data analysis on nurses' job satisfaction and their intentions to leave their current job. *NursingPlus Open*, *2*, 15–20. https://doi.org/10.1016/j.npls.2016.01.002

Blasche, G., Bauböck, V. M., & Haluza, D. (2017). Work-related self-assessed fatigue and recovery among nurses. *International Archives of Occupational and Environmental Health*, *90*(2), 197–205. https://doi.org/10.1007/s00420-016-1187-6

Blasche, G., Wendsche, J., Tschulik, T., Schoberberger, R., & Weitensfelder, L. (2021). Individual determinants of rest-break behavior in occupational settings. *Health*, *9*(10), 1330. https://doi.org/10.3390/healthcare9101330

de Vries, J. D., van Hooff, M. L. M., Geurts, S. A. E., & Kompier, M. A. J. (2017). Exercise to reduce work-related fatigue among employees: A randomized controlled trial. *Scandinavian Journal of Work, Environment & Health*, *43*(4), 337–349. https://doi.org/10.5271/sjweh.3634

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *The Journal of Applied Psychology*, *86*(3), 499–512.

Gifkins, J., Johnston, A., Loudoun, R., & Troth, A. (2020). Fatigue and recovery in shiftworking nurses: A scoping literature review. *International Journal of Nursing Studies*, *112*, 103710. https://doi.org/10.1016/j.ijnurstu.2020.103710

Han, S. J., & Yeun, Y. R. (2023). Psychological intervention to promote resilience in nurses: A systematic review and meta-analysis. *Health*, *12*(1), 73. https://doi.org/10.3390/healthcare12010073

Hernandez, A. F. J., Bautista, R. L. S., & Tan, C. C. (2022). Sleep disturbances during shift work. *Sleep Medicine Clinics*, *17*(1), 1–10. doi:10.1016/j.jsmc.2021.10.001

Jansen, N., Kant, I., van Amelsvoort, L., Nijhuis, F., & van den Brandt, P. (2003). Need for recovery from work: Evaluating short-term effects of working hours, patterns and schedules. *Ergonomics*, *46*(7), 664–680. https://doi.org/10.1080/0014013031000085662

Jenkins, C. D., Stanton, B. A., Niemcryk, S. J., & Rose, R. M. (1988). A scale for the estimation of sleep problems in clinical research. *Journal of Clinical Epidemiology*, *41*(4), 313–321. https://doi.org/10.1016/0895-4356(88)90138-2

Juhola, J., Arokoski, J. P. A., Ervasti, J., Kivimäki, M., Vahtera, J., Myllyntausta, S., & Saltychev, M. (2021). Internal consistency and factor structure of Jenkins sleep scale: Cross-sectional cohort study among 80 000 adults. *BMJ Open*, *11*(1), e043276. https://doi.org/10.1136/bmjopen-2020-043276

Karabinski, T., Haun, V., Nübold, A., Wendsche, J., & Wegge, J. (2021). Interventions for improving psychological detachment from work: A meta-analysis. *Journal of Occupational Health Psychology*, *26*, 224–242. https://doi.org/10.1037/ocp0000280

Karasek, R., & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life*. Basic Books.

Karhula, K., Wöhrmann, A. M., Brauner, C., Härmä, M., Kivimäki, M., Michel, A., & Oksanen, T. (2020). Working time dimensions and well-being: A cross-national study of Finnish and German health care employees. *Chronobiology International*, *37*(9–10), 1312–1324. https://doi.org/10.1080/07420528.2020.1778716

Kinnunen, U., Feldt, T., Siltaloppi, M., & Sonnentag, S. (2011). Job demands–resources model in the context of recovery: Testing recovery experiences as mediators. *European Journal of Work and Organizational Psychology*, *20*(6), 805–832. https://doi.org/10.1080/1359432X.2010.524411

Kinnunen, U., & Mäkikangas, A. (2023). Longitudinal profiles of recovery-enhancing processes: Job-related antecedents and well-being outcomes. *International Journal of Environmental Research and Public Health*, *20*(7), 5382. https://doi.org/10.3390/ijerph20075382

Kunzler, A. M., Chmitorz, A., Röthke, N., Staginnus, M., Schäfer, S. K., Stoffers-Winterling, J., & Lieb, K. (2022). Interventions to foster resilience in nursing staff: A systematic review and meta-analyses of pre-pandemic evidence. *International Journal of Nursing Studies*, *134*, 104312. https://doi.org/10.1016/j.ijnurstu.2022.104312

Langseth-Eide, B., & Vittersø, J. (2021). Ticket to ride: A longitudinal journey to health and work-attendance in the JD-R model. *International Journal of Environmental Research and Public Health*, *18*(8), 4327. https://doi.org/10.3390/ijerph18084327

Lehto, A.-M. (1991). *Quality of working life and equity*. Statistics Finland.

Leskinen, T., Stenholm, S., Aalto, V., Head, J., Kivimäki, M., & Vahtera, J. (2018). Physical activity level as a predictor of healthy and chronic disease-free life expectancy between ages 50 and 75. *Age and Ageing*, *47*(3), 423–429. https://doi.org/10.1093/ageing/afy016

Lidegaard, M., Søgaard, K., Krustrup, P., Holtermann, A., & Korshøj, M. (2018). Effects of 12 months aerobic exercise intervention on work ability, need for recovery, productivity and rating of exertion among cleaners: A worksite RCT. *International Archives of Occupational and Environmental Health*, *91*(2), 225–235. https://doi.org/10.1007/s00420-017-1274-3

Nea, F. M., Kearney, J., Livingstone, M. B., Pourshahidi, L. K., & Corish, C. A. (2015). Dietary and lifestyle habits and the associated health risks in shift workers. *Nutrition Research Reviews*, *28*(2), 143–166. https://doi.org/10.1017/S095442241500013X

Newman, D. B., Tay, L., & Diener, E. (2014). Leisure and subjective well-being: A model of psychological mechanisms as mediating factors. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *15*(3), 555–578. https://doi.org/10.1007/s10902-013-9435-x

Ruotsalainen, J. H., Verbeek, J. H., Mariné, A., & Serra, C. (2015). Preventing occupational stress in healthcare workers. *The Cochrane Database of Systematic Reviews*, *2015*(4), CD002892. https://doi.org/10.1002/14651858.CD002892.pub5

Sagherian, K., McNeely, C. A., & Steege, L. M. (2021). Did rest breaks help with acute fatigue among nursing staff on 12-h shifts during the COVID-19 pandemic? A cross-sectional study. *Journal of Advanced Nursing*, *77*(12), 4711–4721. https://doi.org/10.1111/jan.14944

Selander, K., Korkiakangas, E., Toivanen, M., Yli-Kaitala, K., Kangas, H., Nevanperä, N., & Laitinen, J. (2023). Engaging leadership and psychological safety as moderators of the relationship between strain and work recovery: A cross-sectional study of HSS employees. *Health*, *11*(7), 1045. https://doi.org/10.3390/healthcare11071045

Selander, K., Nikunlaakso, R., & Laitinen, J. (2022). Association between work ability and work stressors: Cross-sectional survey of elderly services and health and social care service employees. *Archives of Public Health*, *80*(1), 83. https://doi.org/10.1186/s13690-022-00841-2

Shiri, R., Nikunlaakso, R., & Laitinen, J. (2023). Effectiveness of workplace interventions to improve health and well-being of health and social service workers: A narrative review of randomised controlled trials. *Health*, *11*(12), 1792. https://doi.org/10.3390/healthcare11121792

Shiri, R., Turunen, J., Karhula, K., Koskinen, A., Sallinen, M., Ropponen, A., Ervasti, J., & Härmä, M. (2023). The association between the use of shift schedule evaluation tool with ergonomics recommendations and occupational injuries: A 4-year prospective cohort study among healthcare workers. *Scandinavian Journal of Work, Environment & Health*, *49*(2), 108–116. https://doi.org/10.5271/sjweh.4068

Siegrist, J., Wege, N., Pühlhofer, F., & Wahrendorf, M. (2009). A short generic measure of work stress in the era of globalization: Effort-reward imbalance. *International Archives of Occupational and Environmental Health*, *82*(8), 1005–1013. https://doi.org/10.1007/s00420-008-0384-3

Sluiter, J. K., van der Beek, A. J., & Frings-Dresen, M. H. (1999). The influence of work characteristics on the need for recovery and experienced health: A study on coach drivers. *Ergonomics*, *42*(4), 573–583. https://doi.org/10.1080/001401399185487

Sonnentag, S., Cheng, B. H., & Parker, S. L. (2022). Recovery from work: Advancing the field toward the future. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*(1), 33–60.

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, *12*(3), 204–221. https://doi.org/10.1037/1076-8998.12.3.204

Steed, L. B., Swider, B. W., Keem, S., & Liu, J. T. (2021). Leaving work at work: A meta-analysis on employee recovery from work. *Journal of Management*, *47*(4), 867–897. https://doi.org/10.1177/0149206319864153

Van Aerschot, L., Puthenparambil, J. M., Olakivi, A., & Kröger, T. (2021). Psychophysical burden and lack ofsupport: Reasons for care workers' intentions to leave their work in the Nordic countries.

International Journal of Social Welfare, *00*, 1–14. https://doi.org/10.1111/ijsw.12520

Virtanen, M., Ervasti, J., Head, J., Oksanen, T., Salo, P., Pentti, J., Kouvonen, A., Väänänen, A., Suominen, S., Koskenvuo, M., Vahtera, J., Elovainio, M., Zins, M., Goldberg, M., & Kivimäki, M. (2018). Lifestyle factors and risk of sickness absence from work: A multicohort study. *The Lancet. Public Health*, *3*(11), e545–e554. https://doi.org/10.1016/S2468-2667(18)30201-9

Wang, F., & Boros, S. (2019). The effect of physical activity on sleep quality: A systematic review. *European Journal of Physiotherapy*, *23*(1), 11–18. https://doi.org/10.1080/21679169.2019.1623314

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