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Original article

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Depressive symptoms appeared as an intermediate factor in the relationship between effort-reward imbalance (ERI) (indicator of work-stress) and neck-shoulder pain, but had a smaller role in the "reversed" relation from neck-shoulder pain to ERI. Our findings suggest that in addition to interventions aiming to reduce work-stress and neck-shoulder pain, actions targeting mental well-being at work could improve employees' physical health.

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Bi-directional relation between effort–reward imbalance and risk of neck-shoulder pain: assessment of mediation through depressive symptoms using occupational longitudinal data

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Objectives Bi-directional associations between perceived effort–reward imbalance (ERI) at work and neck-shoulder pain have been reported. There is also evidence of associations between ERI and depressive symptoms, and between depressive symptoms and pain while the links between ERI, depressive symptoms and pain have not been tested. We aimed to assess whether depressive symptoms mediate the association between ERI and neck-shoulder pain, as well as the association between neck-shoulder pain and ERI.

Methods We used prospective data from three consecutive surveys of the Swedish Longitudinal Occupational Survey of Health (SLOSH) study. ERI was assessed with a short version of the ERI questionnaire, and pain was defined as having had neck-shoulder pain that affected daily life during the past three months. Depressive symptoms were assessed with a continuous scale based on six-items of the (Hopkins) Symptom Checklist. Counterfactual mediation analyses were applied using exposure measures from 2010/2012 (T1), depressive symptoms from 2012/2014 (T2), and outcomes from 2014/2016 (T3), and including only those free of outcome at T1 and T2 (N=2876–3239).

Results ERI was associated with a higher risk of neck-shoulder pain [risk ratio (RR) for total effect 1.24, 95% confidence interval (CI) 1.02–1.50] and 40% of this total effect was mediated through depressive symptoms. Corresponding RR for association between neck-shoulder pain and ERI was 1.36 (95% CI 1.13–1.65), but the mediating role of depressive symptoms was less consistent.

Conclusions Depressive symptoms appear to be an intermediate factor in the relationship between ERI and neck-shoulder pain.

Key terms cohort study; depression; ERI; mechanism; musculoskeletal; neck pain; pathway; psychological factor; stress; work-related stress.

Neck pain is a common problem worldwide, ranking 6th in terms of years lived with disability (YLD) among the 328 conditions studied in the Global Burden of Disease 2016 Study (1). The high disability burden calls for determination of risk factors of neck pain. Such evidence is needed to allow actions preventing neck pain and its adverse consequences.

One probable risk factor for neck and shoulder pain is work-related stress (2). While most prior studies have examined job strain as an indicator of work stress (3),

fewer studies have focused on effort–reward imbalance (ERI) (4, 5). In a longitudinal pseudo-trial setting, onset of exposure to ERI at work has been associated with a higher risk of subsequent neck-shoulder pain onset among employees who reported no ERI or neck-shoulder pain at baseline (6). Furthermore, there was a bi-directional relationship where onset of neck-shoulder pain also increased the likelihood for subsequent onset of ERI. Potential mediators of these associations could be targets of preventive actions, however, the mecha-

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nisms explaining how psychosocial working conditions are linked to neck and shoulder pain are not well characterized nor how neck and shoulder pain could explain an increase in perceived work stress. Suggested mechanisms for an association between work-related stress and neck-shoulder pain include a higher level of muscle tension (7), the employees' increased awareness of pain (8) and decreased pain threshold (9) due to psychological strain. The association can also be reversed (ie, pain to stress). Pain in general can affect work-related factors as working with pain may increase physical restrictions as well as cause difficulties in focusing on work tasks (10).

Plausible pathways between work-related stress and pain hence involve physiological reactions, but also behavioral and psychological factors. According to Sauter & Swanson (11), psychological strain is one of the pathways linking work organization factors, including work-related stress, and musculoskeletal disease. There is also some indication of mediation by psychological strain in terms of worry, fatigue or sleep problems (12), and anger, frustration, anxiety or depression (13). Regarding ERI and pain, a recent review concluded that there is an association between ERI and depressive disorders (14), and depressive disorders have further been linked to an increased risk of neck and shoulder pain (15, 16). There is also evidence in support of neck-shoulder pain being a risk factor for depressive symptoms (17), and as depression can decrease focus on work tasks (18), it may further increase perceived ERI at work. Depressive symptoms may therefore play a role in the pathway from ERI to pain, and vice versa, but this has not been examined in formal mediation analyses. Disentangling the dynamic interplay between the three factors may help to identify points of interventions.

We examined whether depressive symptoms mediate the associations (ie, act as a mechanism) between ERI and neck-shoulder pain. We investigated whether depressive symptoms (i) mediated the association between ERI and subsequent neck-shoulder pain, and (ii) mediated the association between neck-shoulder pain and subsequent ERI. Data were derived from three consecutive surveys to better to address the temporal order between the exposure, mediator and outcome, and in each analysis, we included only those free of the outcome in the first two surveys.

Methods

Study population

We used data from the Swedish Longitudinal Occupational Survey of Health (SLOSH) study, a nationally representative prospective cohort with repeated measures of work environment and health (19). The SLOSH cohort participants include participants from cross-sectional Swedish Work Environment Surveys (SWES) 2003, 2005, 2007, 2009 and 2011, who have originally been sampled from the Labor Force Survey (LFS) by Statistics Sweden (20). Participants of the LFS have been randomly sampled from the Swedish population of which a selection of gainfully employed people 16–64 years of age are included in SWES. The first SLOSH survey took place in 2006 as a follow-up of the SWES 2003. There were two possible self-completion questionnaires: one was directed at "workers" (working ≥30%), and the other to "non-workers" (working <30% or not at all). The SLOSH follow-ups have been conducted biannually since 2006, and the cohort has successively grown with new SWES participants.

For this study, we used data from the four latest surveys for "workers", for which data collection took place in years 2010, 2012, 2014 and 2016. For examination of the association between ERI and neck-shoulder pain, we formed two panels: panel 1 included those responding to questions regarding ERI, depressive symptoms and neck-shoulder pain in 2010 (T_1), depressive symptoms and neck-shoulder pain in 2012 (T_2), and neck-shoulder pain in 2014 (T_3). Panel 2 included those responding to questions regarding ERI, depressive symptoms and neck-shoulder pain in 2012 (T_1), depressive symptoms and neck-shoulder pain in 2014 (T_2), and neck-shoulder pain in 2016 (T_3). Combined, the two panels included 9111 participant observations. After excluding those with neck-shoulder pain at T_1 or T_2 (N=4272) the analytical sample included 4839 participant observations from 3239 individuals. Although there may be selection towards healthy population, we further excluded those with depressive symptom scale ≥17 at T_1 (N=364) to more strictly control for the chronological order of the exposure, mediator and outcome in a sensitivity analysis. The cut-off point of 17 for the depressive symptoms has been suggested as a suitable threshold value for major depression in epidemiological research (21).

For examination of the "reversed" association between neck-shoulder pain and ERI two panels were similarly formed: participants responding to questions regarding neck-shoulder pain, depressive symptoms and ERI at T_1, depressive symptoms and ERI at T_2, and ERI at T_3 were included (N=6755). After excluding those with ERI at T_1 or T_2 (N=2406) the analytical sample included 4349 participant observations from 2876 individuals. For sensitivity analyses, we further excluded those with depressive symptom scale ≥17 at T_1 (N=328). Compared to the respondents to the 2003 SWES (ie, eligible to the inclusion in the SLOSH study), the included participants in these analyses had the same sex-distribution (51% females in SWES versus 49% and 48% in the analytical samples). The Regional

Research Ethics Board in Stockholm approved the study and written informed consent was obtained from each cohort participant.

Effort−reward imbalance (ERI)

According to the ERI model, effort at work is spent as part of a social contract that reciprocates effort by adequate rewards. Rewards, on the other hand, are distributed by three transmitter systems: money, esteem, and career opportunities including job security (22). For measuring ERI, we used a short version of the ERI (S-ERI) questionnaire consisting of ten effort–reward items (22, 23). The shorter version of the original ERI questionnaire is more easily applicable in large scale epidemiologic studies. This version includes three questions related to work efforts (i): "I have constant time pressure due to a heavy workload", (ii) "I have many interruptions and disturbances while performing my job", and (iii) "over the past few years, my job has become more and more demanding". Seven questions related to rewards (i): "I receive the respect I deserve from my superior or other relevant persons", (ii) "my job promotion prospects are poor (reverse coding)", (iii) "I have experienced or I expect to experience an undesirable change in my work situation (reverse coding)", (iv) "my job security is poor (reverse coding)", (v) "considering all my efforts and achievements, I receive the respect and prestige I deserve at work", (vi) "considering all my efforts and achievements, my job promotion prospects are adequate", and (vii) "considering all my efforts and achievements, my salary is adequate". For each of the ten questions, the response alternatives ranged from strongly disagree to strongly agree on a four-point Likert scale. Satisfactory psychometric properties have been identified for the short ERI form in the SLOSH data (24).

A ratio of efforts relative to the rewards is believed to indicate whether there is an imbalance between efforts and rewards at the individual level. The ER-ratio is calculated as: ER= k (E/R) (25), where E is the effort score, R the reward score, and k is a correction factor that is used to adjust for the unequal number of items of the effort and reward scores, which is here k=7/3=0.43. We used the highest quartile (1.29) as a cut point for perception of ERI as in a previous study (26). For sensitivity analyses we applied the commonly used cut point 1 for ERI though prevalence of ERI with this measure was 51% in the total study population.

Neck-shoulder pain

In the questionnaires, neck-shoulder pain was assessed by asking whether the participants had experienced neck and shoulder pain in the past three months. Four response alternatives were available: (i) no, (ii) yes, but does not affect my life at all, (iii) yes, pain affects my life a little, and (iv) yes, pain affects my life a lot. As in our prior study (6), we dichotomized the pain variable into: "no affecting pain" (no pain or pain that does not affect life) and "affecting pain" (pain that affects life a little or a lot). This categorization was done as many people experience pain that is short-term and does not affect their work ability or quality of life. For sensitivity analyses we also used a pain variable dichotomized as "no pain" and "any pain", which comprised all of the "yes" responses.

Depressive symptoms

For the measurement of depression symptoms we used a brief six-item subscale of the (Hopkins) Symptom Checklist (SCL), labelled SCL-Core Depression scale (SCL-CD) that focuses on core symptoms of depression (21, 27). Respondents were asked to indicate to what extent they felt blue, no interests in things, lethargy or low in energy, were worrying too much about things, blamed oneself for things, and felt everything is an effort ($\alpha = 0.89$). The response alternatives were on a five-class Likert scale: (i) not at all; (ii) a little; (iii) moderately; (iv) a lot; and (v) extremely. We summed the responses for each item to get a continuous scale.

Covariates

Sex and age of the participants at T_1 were obtained from national registers. Baseline level of education was self-reported in the questionnaire at T_1 and categorized as "high" if the participant had university education, "intermediate" if completed college education, and "low" if the respondents had lower education. Marital status (married/cohabiting versus not), chronic diseases (any of the following indicated a chronic disease: cardiovascular disease, diabetes, chronic obstructive pulmonary disease, asthma or cancer), and physical workload were also self-reported at T_1. Physical workload was based on work time including lifting or working in twisted positions and it was categorized into three classes: "physically light", "physically intermediate", and "physically demanding" if $< \frac{1}{4}$, $\frac{1}{4}-\frac{1}{2}$, or $\geq \frac{3}{4}$ of the work time included lifting or working in twisted positions, respectively.

Statistical analyses

Compared to traditional approaches to study mediation, counterfactual mediation analyses can provide better understanding of the causal structure of the examined variables as it allows for a formal definition of direct and indirect effects (28). We therefore applied

counterfactual mediation analyses using a SAS macro presented by Valeri (29) and VanderWeele (30). This approach is particularly suitable for our analyses as it allows exposure-mediator interaction and non-linearities, enables the use of common binary outcomes (such as pain and ERI), and provides direct and indirect effects on a ratio scale for dichotomous outcomes (29, 30). As the outcomes in both analyses were common, negative binomial regression models were used for the main associations. Whether the continuous measure of depressive symptoms was an intermediate variable in the associations between ERI and neck-shoulder pain was examined by linear regression models. The macro calculates controlled direct effects (CDE) with a risk ratio (RR) that expresses how much the outcome would change on average if the mediator was fixed to null (ie, eliminated) and exposure changed from 0 to 1. Natural direct effect (NDE) estimates indicate the association between exposure and outcome in a scenario where the mediator is fixed to the level of the non-exposed also among the exposed. Natural indirect effects (NIE) are separately calculated referring to the excess risk of the outcome among the exposed that is due to an increase in the level of mediator from 0 to 1. The natural direct and indirect effects are also summed to estimate the total effect (TE), ie, the RR estimating the association between the exposure and outcome. The SAS macro additionally produces the proportion (%) of the TE that is explained by depressive symptoms. For the RR scale this proportion is calculated as: RR(nde) × [RR(nie) -1] / RR(nde) × RR(nie) -1 (31).

The analyses are based on assumptions that there is: (i) no unmeasured exposure-outcome confounding, (ii) no unmeasured mediator-outcome confounding, (iii) no unmeasured exposure-mediator confounding, and (iv) no mediator-outcome confounder affected by the exposure. Points 1–3 additionally require an assumption of correct temporal ordering and for this reason we restricted the main analyses to people free of the outcome (pain/ERI) at the first two surveys, and additionally tested models by further restricting the analyses to individuals also free of the mediator at T_1. The assumption of no unmeasured mediator-outcome confounding was tested using a quantitative sensitivity analysis suggested by VanderWeele (30), which provides estimates of how much unmeasured confounding would be required to make the direct and indirect effect estimates non-significant.

We ran two mediation models in each set of analyses: Model 1 was adjusted for age and sex and Model 2 was additionally adjusted for marital status, education, chronic disease and physical workload. As a sensitivity analyses we also ran the same models for "any pain" and using a cut-off 1 for ERI. All analyses were performed using SAS 9.4 statistical software (SAS Institute, Cary, NC, USA).

Results

Mean ages of the included study participants were 51.5 [standard deviation (SD) 10.2] and 49.0 (SD 8.8) years in the analytic samples examining associations between ERI and neck-shoulder pain, and associations between neck-shoulder pain and ERI, respectively. For the corresponding analysis groups, the mean score for depressive symptoms at T_2 were 9.4 (SD 4.0) and 9.7 (SD 4.0). Other descriptive statistics for the analytic samples by exposure status are presented in table 1.

In the fully adjusted model, the TE of ERI on neck-shoulder pain was (RR 1.24, 95% CI 1.02–1.50), and the indirect effect through depressive symptoms was 1.08 (95% CI 1.03–1.14), indicating that 40% of the association was mediated through depressive symptoms (table

Table 1. Descriptive statistics of the study samples for the two analyses by exposure status. [ERI=effort−reward imbalance]

Variable	N [a]	ERI – neck-shoulder pain [b]			
Exposure (T1)		No ERI (N=2618)		ERI (N=621)	
		N	%	N	%
Sex	-				
Women		1244	47.5	395	63.6
Marital status	42				
Married/cohabiting		2066	80.0	474	77.3
Education	-				
Low		856	32.7	170	27.4
Intermediate		585	22.3	125	20.1
High		1177	45.0	326	52.5
Chronic disease	8				
Yes		337	12.9	91	14.7
Physical work	329				
<¼ of the work time		1840	78.6	432	75.8
¼–½		385	16.5	88	15.4
≥¾		115	4.9	50	8.77
Outcome (T3)					
Affecting pain [b]	-	376	14.4	119	19.16

		Neck-shoulder pain – ERI [c]			
Exposure (T1)		No pain [d] (N=2019)		Pain [d] (N=857)	
		N	%	N	%
Sex	-				
Women		985	48.8	523	61.0
Marital status	38				
Married/cohabiting		1589	79.8	687	81.1
Education	-				
Low		677	33.5	325	37.9
Intermediate		446	22.1	206	24.0
High		896	44.4	326	38.0
Chronic disease	7				
Yes		239	11.9	141	16.5
Physical work	280				
<¼ of the work time		1417	78.6	555	70.1
¼–½		300	16.6	165	20.8
≥¾		87	4.82	72	9.09
Outcome (T3)					
ERI	-	215	10.7	124	14.5

[a] Number of missing observations.
[b] Those free of neck-shoulder pain at T1 or T2.
[c] Those free of ERI at T1 or T2.
[d] Neck-shoulder pain that affects life a little or a lot.

2). The CDE and NDE were statistically non-significant (table 2) as was the interaction between exposure and mediator (P-value for interaction 0.96). The results remained similar after excluding those with depressive symptoms at baseline (RR for TE 1.23, 95% 0.99–1.52 and NIE 1.06, 95% 1.01–1.11), although the proportion mediated was lower (31%) (table 2). According to a sensitivity analysis, unmeasured mediator-outcome confounder(s) with a RR of 1.3 for exposure and outcome, conditional on the mediator, would explain away the indirect effect. When we used 1 as the cut-off point for ERI, the TE were slightly weaker, but the proportions mediated through depressive symptoms were slightly larger (supplemental table S1, www.sjweh.fi/show_abstract.php?abstract_id=3768). When using "any pain" as an outcome, the associations were close to null and statistically non-significant (data not shown).

For the "reversed" association for neck-shoulder pain as a predictor of ERI, the CDE (1.93, 95% CI 1.16–3.20) was stronger than the NDE indicating exposure-mediator interaction in this model (P-value for interaction 0.05). The TE in the fully adjusted model was 1.34 (95% CI 1.10–1.64) and the indirect effect through depressive symptoms was 1.04 (95% CI 0.99–1.10) (table 3), indicating that, if anything, only 16% of the association was mediated through depressive symptoms. If the exposure-mediator interaction was not allowed, the indirect effect would have been slightly stronger

(1.09, 95% 1.04–1.13). After additionally excluding those with depressive symptoms at baseline the TE was slightly attenuated (RR 1.29, 95% 1.03–1.59), but there was no clear indirect effect through depressive symptoms (table 3). When we used 1 as the cut-off point for ERI, the NDE and TE were weaker, while the proportion mediated through depressive symptoms was 27% in the total sample. The results were also similar among those with no depression at baseline although the TE was slightly weaker and did not reach statistical significance (supplemental table S2, www.sjweh.fi/show_abstract.php?abstract_id=3768). When we used "any pain" as the exposure, the findings were similar to affecting pain (data not shown).

Discussion

This study indicated that depressive symptoms is a mediator in the association between perceived ERI at work and neck-shoulder pain. Interestingly, depressive symptoms did not seem to similarly mediate the "reversed" association between pain and onset of perceived ERI, indicating that this bi-directional relationship between ERI and pain may be driven by different mechanisms.

There is paucity of studies examining the role of mental health problems in the associations between

Table 2. Risk ratios (RR) for affecting neck-shoulder pain in relation to highest quartile of effort−reward imbalance (ERI) from the mediation analyses. [CI=confidence interval; CDE=controlled direct effect; NDE=natural direct effect; NIE=natural indirect effect; TE=total effect.]

Association	CDE		NDE		NIE through mediator		TE		% mediated
	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	
From ERI to neck-shoulder pain									
Model 1 [a]	1.14	0.72–1.78	1.14	0.94–1.39	1.08	1.03–1.14	1.24	1.03–1.49	40
Model 2 [b]	1.12	0.70–1.80	1.13	0.92–1.39	1.08	1.03–1.13	1.22	1.00–1.48	41
Depressive symptoms at T1 excluded									
Model 1 [a]	1.18	0.70–1.99	1.16	0.94–1.43	1.06	1.01–1.11	1.23	1.00–1.51	29
Model 2 [b]	1.16	0.67–1.99	1.15	0.92–1.43	1.06	1.01–1.11	1.21	0.98–1.50	31

[a] Adjusted for age, sex and panel.
[b] Adjusted for age, sex, panel, marital status, education, chronic disease and physical work.

Table 3. Risk ratios (RR) for highest quartile of effort−reward imbalance (ERI) in relation to affecting neck-shoulder pain from the mediation analyses. [CI=confidence interval; CDE=controlled direct effect; NDE=natural direct effect; NIE=natural indirect effect; TE=total effect.]

Association mediator	CDE		NDE		NIE through mediator		TE		% mediated
	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	
From neck-shoulder pain to ERI									
Model 1 [a]	2.01	1.24–3.27	1.30	1.07–1.59	1.04	0.99–1.10	1.36	1.12–1.65	16
Model 2 [b]	1.93	1.16–3.20	1.28	1.04–1.58	1.04	0.99–1.10	1.34	1.09–1.64	17
Depressive symptoms at T1 excluded									
Model 1 [a]	2.57	1.47–4.50	1.29	1.04–1.60	1.01	0.96–1.06	1.30	1.06–1.60	4
Model 2 [b]	2.55	1.42–4.57	1.28	1.02–1.61	1.01	0.95–1.06	1.29	1.03–1.60	3

[a] Adjusted for age, sex and panel.
[b] Adjusted for age, sex, panel, marital status, education, chronic disease and physical work.

work-related stress factors and pain. To the best of our knowledge this is the first study to examine to what extent the associations between ERI and neck-shoulder pain may be explained by depressive symptoms. One study including female elderly care workers examined associations between psychosocial working conditions and low back pain by adjusting for depressive symptoms. They found that the associations almost disappeared after adjustment for depressive symptoms, which could be an indication of mediation (32). However, mediation by depressive symptoms was not properly assessed, and neck-shoulder pain was not specifically examined.

The longitudinal design of the current study allowed us to analyze the prospective associations between the variables of interest, ensuring that exposure preceded the mediator and the mediator preceded the outcome, which is essential in establishing whether a certain factor is an intermediate variable in a pathway. Also, traditional mediation analyses simply comparing two regression models may be considerably biased especially if common binary outcomes are examined (31). In this study we therefore based our analyses on the counterfactual framework allowing for valid effect decompositions into direct and indirect effects for common binary outcomes even in the presence of non-linear models and interactions between exposure and mediator (29).

One limitation of this study is that we used self-reported data on ERI and pain, which may cause common method bias. This means that those who report high values on the exposure measure are likely to report higher values also on the mediator and outcome measures, which may inflate the findings. However, the fact that we separated the measurements of exposure, mediator and outcome in time should attenuate the impact of this kind of bias. Also, in epidemiological studies pain is commonly self-reported. As we used dichotomized ERI and pain measures, we may have lost some information. However, these dichotomizations enabled the restriction of the data to those who at T1 and T2 were free of the examined outcome. The time interval between the measurements for the exposure and mediator as well as between the mediator and outcome was two years, which we acknowledge is a relatively long time that introduces possibilities for misclassification due to the recurrent nature of both pain and depressive symptoms. For example, we cannot be sure that people were completely free of neck-shoulder pain affecting their lives or depressive symptoms between the study phases or before the baseline. Neck-shoulder pain is often recurrent, and we asked about pain during the past three months, so some pain periods may have been omitted, which may have attenuated the findings. However, that we observed a mediating effect despite the two-year time intervals, strengthens the plausibility of the examined pathway.

In epidemiological studies, there is also possibility of unmeasured confounding. For example, regarding the mediator, it is possible that factors closely associated with depressive symptoms have influenced the results, that is the mediator could be a proxy for unmeasured factors. Additionally, personality may have a role in perception of ERI, depressive symptoms, and pain, but we had no measure to control for differences in personality.

Another point to consider is that selection into the study samples may have affected the findings. Because ERI and pain are risk factors of non-participation in three consecutive study phases in the SLOSH cohort, and as indicated by the slightly lower prevalence of chronic diseases in the analytical samples (11.9–16.5%) compared to the whole study sample (18.6%), there may have been selection leading to a healthy worker effect. This is likely to have underestimated the strength of the observed associations. We were not able to test all the assumptions related to the mediation analysis, but according to our sensitivity analysis mediator-outcome confounding need to not to be overly strong to attenuate the observed indirect effect to non-significant. Therefore, although we used a cohort sampled from the general working population, the generalizability of the findings should be confirmed in other study populations. Due to the complex dynamics between work stress, depressive symptoms and pain, future studies should also determine whether neck-shoulder pain is a mediating factor in the association between ERI and depressive symptoms.

In conclusion, we confirmed a bi-directional relation between ERI and neck-shoulder pain, and we identified depressive symptoms as a potentially important mechanism explaining the relation between ERI and onset of neck-shoulder pain. On the other hand, depressive symptoms appeared to play a smaller role in the "reversed" relation between neck-shoulder pain and ERI. This may point toward different mechanisms explaining this bi-directional relationship between ERI and pain. Our findings suggest that in addition to interventions aiming to reduce work-stress and neck-shoulder pain, targeting mental wellbeing at work could also improve employees' physical health. A recent review concluded that digital mental health interventions in the workplace can result in improved psychological well-being (33), suggesting that similar approaches could be beneficial particularly for those who have work-related stress.

of the data, the writing of the report, nor in the decision to submit the paper for publication.

The authors declare no conflicts of interest.

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