Short communication

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Can illegitimate job tasks be reduced by a participatory organizational-level workplace intervention? Results of a cluster-randomized controlled trial in Danish pre-schools

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Objectives We examined whether a cluster randomized controlled participatory organizational-level workplace intervention affected the level of unnecessary, unreasonable, and illegitimate tasks.

Methods A cluster-randomized controlled trial was implemented in municipal pre-schools. The intervention used a participatory approach and aimed improving the psychosocial working environment by focusing on core tasks. The sample consisted of 41 pre-schools with 404 employees in the intervention group and 30 pre-schools with 230 employees in the control group. We measured unnecessary and unreasonable tasks at baseline and at two-year follow-up by one item on unnecessary and one item on unreasonable tasks, respectively, and combined both items into a measure of illegitimate tasks. We analyzed within- and between-groups changes in unnecessary and unreasonable tasks and in the combined measure of illegitimate tasks.

Results The scores for unnecessary, unreasonable, and illegitimate tasks remained virtually unchanged in the intervention group and increased in the control group. The different development in the two groups was statistically significant for unreasonable tasks (+0.02 versus +0.13, P=0.04) and the combined measure of illegitimate tasks (+0.01 versus +0.11, P=0.04) but not for unnecessary tasks (+0.00 versus +0.08, P=0.16).

Conclusion A comprehensive participatory organizational-level intervention with a focus on core job tasks may protect against an increase in illegitimate tasks in Danish pre-schools.

Key terms Denmark; illegitimate task; occupational health; psychosocial; RCT; stress; stress-as-offense-to-self; unnecessary task, unreasonable task.

According to the stress-as-offense-to-self (SOS) framework, illegitimate job tasks may be a stressor affecting employees' health (1). Illegitimate tasks consist of unnecessary tasks (tasks that should not be done at all) and unreasonable tasks (tasks that are outside of one's occupation or occupational status and therefore should be done by someone else). The illegitimacy of a task depends on whether the employee perceives the task as core or peripheral. Peripheral tasks are illegitimate in that they express a lack of appreciation for the employee since these tasks are not core to what an employee should be expected to do (1). Observational studies have shown associations between illegitimate tasks and counterproductive work behavior (2), higher level of cortisol (3), higher level of stress (4), decreased level of mental health (5), more sleep disturbances (6), lowered self-esteem (1, 7), and feelings of resentment towards one's organization and burnout (1). However, little is known whether workplace interventions can reduce the prevalence of illegitimate tasks at work.

In this article, we examine whether a cluster randomized controlled participatory organizational-level workplace intervention affected the level of unnecessary, unreasonable, and illegitimate job tasks. The

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intervention was not meant to test the SOS framework but aimed to reduce sickness absence and enhance employees' well-being by improving the psychosocial working environment with a focus on core job tasks. As reported elsewhere, we found that the intervention had led to a reduced risk of sickness absence (8) but did not affect well-being (9). Whether the intervention affected intermediary variables, such as the psychosocial working environment, including illegitimate tasks, has not yet been examined. Based on the assumption that this intervention, with its focus on core job tasks, may reduce illegitimate job tasks, we tested the hypothesis that participants in the intervention group at follow-up would report a greater reduction in unnecessary and unreasonable tasks and the combined measure of illegitimate tasks than participants in the control group.

Methods

Study design and sample

The Pioneer intervention study has been described in detail elsewhere (8). Briefly, Pioneer was a cluster randomized controlled trial (RCT) implemented in 78 pre-schools in the Municipality of Copenhagen: 44 pre-schools in the intervention and 34 pre-schools in the control group. Of these, 3 intervention and 4 control group pre-schools were lost during follow-up, resulting in 41 intervention and 30 control group workplaces. All employees who were present during the time of baseline measurements were eligible for the study yielding a sample of 1560 employees, of which 1245 responded (79.8%). Of those responders, 664 (53.3%) also responded to the two-year follow-up questionnaire, including 634 with complete answers on all key variables, 404 in the intervention and 230 in the control group. According to Danish law, research studies that use solely questionnaire and register data do not need approval from the National Committee on Health Research Ethics (Den Nationale Videnskabsetiske Komité).

The intervention

The intervention was initiated September 2011 and lasted until June 2013. In each intervention workplace, the pedagogical leader and two employee representatives formed a steering group that managed the intervention. Each steering group received implementation support from a professional working environment consultant and participated in seminars and workshops on how to develop intervention activities using a participatory approach, change management training, workplace culture and evaluation tools. Based on seminars, workshops and consultants' support, steering groups developed and implemented workplace-specific intervention activities involving all employees. The intervention aimed to improve the psychosocial working environment with a focus on core job tasks.

When developing workplace-specific intervention activities, steering group members and employees were asked to ensure improvement of performance of core job tasks by improving performance of central job tasks and procedures. Examples of specific intervention activities conducted in the study include re-organization of staff meetings, changes in work and holiday schedules, re-structuring of the work schedule to create time for professional reflection, modifications to work culture, and changes in the allocation of overtime. See also e-Appendix 1 (www.sjweh.fi/show_abstract.php?abstract_id=3683) for a more detailed description of the Pioneer intervention.

Effect measures

We measured illegitimate tasks with self-administered questionnaires at baseline (September 2011) and at two-year follow-up, using one item on unnecessary job tasks ("How often do you have to do something at work that appears to be unnecessary to you?"), and one item on unreasonable job tasks ("How often is your worktime spent on activities outside your central job tasks?"). Both items had six response categories (1="at no time", 2="a little bit of the time", 3="some of the time", 4="a whole part of the time", 5="most of the time", 6="all of the time"). The distribution of the responses is shown in e-Appendix 2 (www.sjweh.fi/show_abstract.php?abstract_id=3683).

In accordance with the SOS theory, we combined the items on unnecessary and unreasonable tasks in a measure of illegitimate tasks by calculating the mean of the two items. Cronbach's alpha for this combined measure was 0.43. On all three measures (unnecessary, unreasonable, and illegitimate tasks), higher scores indicated a higher level of these tasks.

Statistical analyses

All analyses were conducted using SAS 9.4 (SAS Institute, Cary, NC, USA)

Using Chi-square, two-sample t-test and Proc GLM, we tested baseline differences between the intervention and the control group. Next, paired t-tests were used to analyze the change in unnecessary, unreasonable, and illegitimate job tasks from baseline to follow-up within each of the two groups. Finally, we used the Genmod procedure to analyze the difference in change in unnecessary, unreasonable and illegitimate job tasks between

intervention and control group during follow-up taking into account the clustering effect of workplaces. We calculated the unadjusted estimate and an estimate adjusted for the covariates sex, age, job group (pedagogical leader, nursery nurse, nursery nurse assistant, other job group), workplace type (integrated, daycare, kindergarten), workplace size, and baseline scores of illegitimate job tasks and the sub-scores of unnecessary and unreasonable tasks, respectively. We further estimated the magnitude of the effect size by calculating Cohen's d (10).

In addition to these main analyses, we conducted supplementary analyses, examining whether baseline values of unnecessary, unreasonable and illegitimate job tasks were associated with measures of well-being (job satisfaction, exhaustion and sleep disturbances) at follow-up. The methods for these supplementary analyses are described in e-Appendix 3 (www.sjweh.fi/show_abstract.php?abstract_id=3683).

Results

Baseline characteristics of participants

Compared to the control group, intervention group employees were younger (mean age: 42.7 versus 44.6 years, P=0.03) and were employed at workplaces of greater size (mean size: 23.5 versus 21.6 employees, P=0.01). The two groups did not differ statistically significantly with regard to sex, job group, and workplace type. Baseline scores of unnecessary, unreasonable and illegitimate job tasks were similar in both groups (all P>0.61).

Effect of the intervention on illegitimate job tasks

Table 1 shows the within-group changes in unnecessary, unreasonable, and illegitimate job tasks from baseline to follow-up. The scores for these job tasks remained virtually unchanged in the intervention group and increased in the control group.

Table 2 shows the between groups changes in unnecessary, unreasonable, and illegitimate job tasks from baseline to follow-up, ie, the interaction of change over time × group. In the adjusted model, the difference between the unchanged score in the intervention group and the increased score in the control group was not statistically significant for unnecessary tasks (P=0.16) but was statistically significant for both unreasonable tasks (P=0.04) and the combined measure of illegitimate tasks (P=0.04). Cohen's d was 0.08, 0.11, and 0.11 for unnecessary, unreasonable, and illegitimate tasks, respectively. This indicates very small intervention effects (11).

Supplementary analyses

As shown in e-Appendix 3, e-table 2 (www.sjweh.fi/show_abstract.php?abstract_id=3683) shows the association of the score of predictor variables (unnecessary, unreasonable and illegitimate tasks) at baseline with endpoints (job satisfaction, exhaustion, sleep disturbances) after two years of follow-up. In the adjusted model, unnecessary tasks and the combined measure of illegitimate tasks at baseline were associated with a higher level of exhaustion at follow-up. Unreasonable tasks at baseline were not associated with exhaustion at follow-up. None of the predictor variables were associated with job satisfaction or sleep disturbances.

Discussion

During the two-year follow-up, unnecessary tasks, unreasonable tasks, and the combined measure of illegitimate tasks remained unchanged in the intervention group and increased in the control group. Thus, the participatory organizational-level workplace intervention did not reduce these tasks but seems to have protected against an increase of these tasks during the follow-up period. This protective effect was particularly pronounced with regard to unreasonable tasks. In the adjusted model, the difference between the two groups in unreasonable, but not unnecessary, tasks was statistically significant (P=0.04). Cohen's d indicated that the intervention effects were very small.

Similar results, where interventions did not reduce – but protected against an increase in – adversity have

Table 1. Within-group changes in unnecessary, unreasonable, and illegitimate tasks after two-year follow-up. [SD=standard deviation

Tasks	Intervention group								Control group							
	N	Baseline Mean	SD	Follow-up Mean	SD	Change	t	P-value	N	Baseline Mean	SD	Follow-up Mean	SD	Change	t	P-value
Unnecessary	404	2.65	1.02	2.65	1.00	+0.00	0.00	1.00	230	2.69	0.95	2.77	1.03	+0.08	-1.09	0.28
Unreasonable	404	2.61	1.01	2.63	1.00	+0.02	-0.32	0.75	230	2.62	1.04	2.75	1.04	+0.13	-1.50	0.14
Illegitimate	404	2.63	0.87	2.64	0.84	+0.01	-0.22	0.83	230	2.65	0.84	2.76	0.87	+0.11	-1.65	0.10

Table 2. Between-groups changes in unnecessary, unreasonable and illegitimate tasks after two-year follow-up. [Est=estimate]

Tasks	N	Crude			Adjusted [a]		
		Est	95% CI	P-value	Est	95% CI	P-value
Unnecessary	634	-0.08	-0.26–0.09	0.35	-0.11	-0.27–0.04	0.16
Unreasonable	634	-0.11	-0.30–0.07	0.24	-0.14	-0.28– -0.01	0.04
Illegitimate	634	-0.10	-0.24–0.05	0.20	-0.12	-0.25– -0.00	0.04

[a] The adjusted analysis on the interaction change × group is adjusted for sex, age (continuous), job group (pedagogical leader, nursery nurse, nursery nurse assistant, other job group), workplace type (integrated, day care, kindergarten), workplace size (continuous) and baseline scores of unnecessary, unreasonable and illegitimate tasks respectively. Workplace identification number is included in a repeated statement.

been recently reported in other psychosocial intervention studies (12, 13). This may indicate that there is currently an international trend towards a deteriorating psychosocial work environment and that it is more realistic to aim for preventing deterioration rather than improving working conditions. We are not sure if this rather bleak interpretation of our results is correct, but we suggest that future intervention studies should take the possibility of this downward trend into consideration.

To the best of our knowledge, this is the first RCT showing an effect of a workplace intervention on illegitimate tasks. Although the effect size was small, this is an important finding, as previous observational research studies suggest that illegitimate tasks may be hazardous to employees' health and wellbeing (1–7). Our supplementary analyses showed that illegitimate tasks were prospectively associated with a higher level of exhaustion, further supporting the notion that illegitimate tasks may affect employees' well-being.

Strengths and limitations

Strengths of the study are the comprehensive and intensive intervention, the evaluation of the intervention by a cluster RCT and the high response rate at baseline. A limitation is the assessment of illegitimate tasks by only two items rather than an established instrument, such as the Bern Illegitimate Tasks Scale (BITS) (2). On the other hand, some studies have shown that single items can be valid measures if they capture the conceptual essence of a construct well (14).

We are confident that the item on unnecessary tasks has captured the essence of the unnecessary task scale in BITS well, but we are less confident about our item on unreasonable tasks. Whereas in BITS the inappropriateness is explicitly mentioned ("should be done by someone else", "are going too far", "put you into an awkward position", "are unfair"), the wording of our item is less pointed ("activities outside your central job tasks"). Thus, it is possible that with our item, we have overestimated the degree of unreasonable tasks at work.

The Cronbach's alpha of 0.43 for the combined measure of illegitimate tasks was rather low, indicating low internal consistency. Considering that a Cronbach's alpha value is of limited significance for scales with just two items (15), we kept the combined measure in the analyses. We acknowledge, though, that in this study, the results of the two items on unnecessary and unreasonable tasks may be more meaningful than the result of the combined measure of illegitimate tasks.

Another limitation was the attrition rate of 53.3% during follow-up, which was partly due to the fact that some employees left the workplace during follow-up and others did not respond to the follow-up questionnaire. In a previous analysis that showed an effect of the intervention on sickness absence (8), we were able to follow-up all employees in sickness absence registers and therefore avoided any loss to follow-up. This was not possible in the present study that had to rely on self-reported illegitimate tasks as no register data on illegitimate tasks exists. It is also a limitation that we assessed illegitimate tasks only at baseline and two-year follow-up, but not in the time-in-between, and therefore could not analyze in more detail the changes of illegitimate tasks over time.

Concluding remarks

In summary, we conclude that a comprehensive organizational-level intervention conducted in Danish preschools shows that a participatory intervention focusing on improving core job tasks may protect against an increase in illegitimate job tasks. Further research needs to elucidate whether this finding may be generalized to other occupational settings and countries.

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