WORKSHOPS WITH CHILDCARE WORKERS TO REDUCE MUSCULOSKELETAL DISORDERS

General information

Country: Denmark

Sector: Human health and social work activities

Type of organisation: Provincial authority

Size of organisation: Public and private childcare institutions for children aged 0 to 3 years (in total 19 institutions).

Location: Urban Copenhagen

Job/tasks: Childcare

Workplace and task characteristics: Lifting, carrying and supporting children. Involves bending forward, twisting of back and sitting on floor.

Workplace participation measures: Worker focus groups used participatory ergonomics to identify and prioritise hazards and determine solutions.

The action

Background

Regular tasks included in childcare work with children (0-3) consists of facilitation activities that support the cognitive and physical development of the children. It also comprises supporting, helping and assisting the children with practical tasks, such as eating, getting dressed or changing diapers.

Childcare work requires several demanding body postures and movements, such as lifting, carrying and supporting children. This means that the childcare workers often bend forward, twist their back, or sit on the floor when interacting with children. This causes high incidence of musculoskeletal pain, especially pain in the low back, neck, shoulders, knees, elbows, hands, hips and feet/ankles.

In the period leading up to the project, the internal occupational safety and health (OSH) advisors in the municipality of Copenhagen (Arbejdsmiljø København) received an increasing number of notifications regarding the work environment, high levels of sickness absence and workers reporting musculoskeletal pain from managers and OSH representatives in childcare institutions in the Copenhagen area. This was confirmed by a nationally representative survey on health and work environment indicating that childcare workers in Denmark report a great amount of physical workload, much physical exertion during work, high incidence of musculoskeletal pain and high rate of sickness absence.

This led the OSH advisors to reach out to the Danish National Research Centre for the Working Environment. Together they co-developed a participatory ergonomics intervention project to reduce risk factors for musculoskeletal pain and sickness absence and associated costs. The participatory ergonomics activities were initiated to encourage workers to get involved in optimising their own work routines to decrease work-related risk factors and improve their health.

Participants and stakeholders

In total, 96 childcare workers from eight private and public day care institutions participated in the research project. The majority (81%) of the workers were female and native Danes (90%). As part of their daily work tasks, childcare workers organise and distribute specific tasks, and initiate and implement new procedures and ideas. Childcare workers are generally characterised as dedicated to caring for children and putting children's needs before their own.

A research team designed and organised the intervention and developed a protocol describing all intervention activities. Three ergonomics consultants (occupational therapists and physiotherapists) from the municipality's

internal OSH advisors presented and guided the intervention activities. Before the intervention, the researchers trained the ergonomics consultants in how to follow the protocol and carry out the intervention activities.

The childcare institutions in the municipality of Copenhagen are divided into five administrative divisions, covering all public institutions and some private institutions. Within each division, the institutions are organised into a number of groups (six to nine groups) of institutions (three to eight institutions per group). Each one has an institution group manager. The institutions are further divided into work teams. At each organisational level, the research and ergonomics teams held informational meetings, discussed the intervention and ensured managers' consent to participate at institutional levels.

Participatory approaches, methods and tools

Main principles

The participatory approach consisted of a 20-week, whole-system, participatory ergonomics intervention. During the intervention period, the ergonomics consultants invited all members of the work teams to participate in three participatory workshops held alongside regular staff meetings.

In the workshops, the childcare workers systematically carried out the following six steps:

- Identify risk factors.
- Analyse risk factors.
- Develop solutions.
- Implement prototypes.
- Evaluate prototypes.
- Adopt solutions.

The childcare workers participated in all six steps, including prioritisation and implementation of solutions.

Initial workshop

The first workshop lasted three hours and covered several procedures.

Firstly, the ergonomics consultants asked the work teams to identify and prioritise three to four work tasks that they perceived as important risks of musculoskeletal pain. The selection criteria were: a) many workers perform the task, or the task is performed many times a day, and b) the task entails either high physical workload or much physical activity. The selected work tasks were defined as core work tasks.

Next, the consultants asked workers to identify and prioritise solutions according to efficiency, feasibility and integration with the core task. To help the participants develop solutions, the ergonomics consultant presented a "prevention flower". It consisted of seven petals representing the different prevention elements that the workers needed to consider: workspace; culture, norms and values; training and knowledge; work postures and techniques; personal protective equipment; assistive devices; and organisation and planning work tasks. Each work team discussed the solutions and selected one. After this, the work team developed an action plan, specified actions and responsible persons, and carried out the actions.

Follow-up workshops

The two follow-up workshops last 1.5 hours each. The ergonomics consultants conducted the second workshop approximately six weeks after the initial workshop, and the final workshop approximately four weeks after the second workshop. At the two follow-up workshops, the work teams evaluated and adjusted the solutions, developed a plan for how to maintain the adopted solution, and decided how to continue a process of identifying new risk factors and solutions once the intervention period ended.

What was achieved

Risks and solutions

The identified hazards included lifting children up onto changing tables and into cribs, and squatting or sitting on the floor when assisting the children in getting dressed for outdoor activities. Many of the generated solutions related to making the children less dependent on active assistance from the childcare workers. This included the work teams purchasing low-cost equipment enabling children to safely climb up to a comfortable work height for the childcare worker. It also included the work teams dedicating time to teach the children to get dressed themselves, reorganising other work tasks so the schedule allowed the necessary time for the children to get dressed, and purchasing or relocating stools to the dressing areas to decrease childcare workers' time spent sitting on the floor or squatting.

Reduction in sickness absence

The researchers measured the childcare workers' self-rated physical exertion and musculoskeletal pain concerning maximal pain intensity in eight body regions (low back, neck, shoulders, knees, elbows, hands, hips, and feet or ankles), number of pain regions and pain-related work interference. In addition, the childcare workers reported being sick due to musculoskeletal pain, self-efficacy, need for recovery and workers' self-perceived level of involvement.

After 20 weeks, pain-related sickness absence was on average reduced by 0.4 days, corresponding to an impressive decrease of 88%. Despite the researchers' expectation, the intervention did not decrease the musculoskeletal pain, physical exertion, or change any other outcome measures.

Worker satisfaction

When asked, participants were satisfied overall with the intervention (78%) and found it relevant (82%). In addition, nearly all participants (92%) considered the intervention to be relevant for other childcare institutions. After implementing the intervention, 58% of the participants agreed they had finally addressed some hazardous work methods they had previously accepted.

Case extracts and quotes

'Many of the kindergarten teachers experienced physical pain, which made the workplace change relevant for them, as it focused on their needs.'

'The kindergarten teachers perceived the workplace change as meaningful when the solutions were closely associated with the core tasks. This is important so that the solutions at the same time were associated with the core tasks and ergonomic problems […] The workplace change effect on MSD-related sickness absence could therefore be explained by the children requiring less assistance, possibly making the childcare worker better able to work with the same level of MSD.'

'The more management participate in start-up meetings, the higher the chance of success.' A clear distribution of roles reduces the uncertainty about who has responsibility for the different tasks. Knowing who does what means that the nursery workers can concentrate on their specific work tasks.

The external support from OSH consultants was important for the generation of solutions. If the kindergarten teachers had a hard time keeping up the motivation to implement changes, visits from the external OSH consultants increased their motivation.

Having time to have a nuanced and detailed talk with colleagues about challenges expanded the kindergarten teachers' consciousness about how to cooperate with colleagues and how to draw on each other's competencies and knowledge.

'… they can see it makes a difference. Experiencing themselves that they have less pain …'

Resources, costs and benefits

- The main intervention costs included costs for planning and conducting the workshops, costs related to childcare workers' work time spent on workshops, and implementation of changes, including purchase of new equipment.
- Costs related to the workshops covered the work time of the ergonomics consultants (including preparation time), refreshments and stationery.
- The childcare workers' involvement and activities took place entirely during work time financed by the workplace.
- Costs relating to new equipment was kept at a minimum and within the existing budget of the individual institutions.
- Costs concerning researchers' time and effort, the development of the intervention, introductory and preparatory meetings, and printed information materials were covered by a research grant.
- The benefits in terms of decreased sickness absence are considerable and expected to outweigh the costs.

Analysis

Barriers

- Lack of managerial support and involvement in the process were major barriers to implementing solutions. Higher levels of participation by the managers in the meetings led to bigger changes for success.
- The intervention and follow-up meetings were time-consuming and took up time from other items on the agenda in the pre-planned staff meetings. The institutions had to prioritise the time for the intervention, and sometimes made compromises with other important and competing issues.
- Some of the groups needed detailed guidance in suggesting solutions due to limited knowledge about ergonomics. Though it was a participatory intervention, the ergonomics consultants sometimes had to propose the solution to ensure that the solution would actually counteract the risk.
- The ergonomics consultants felt that a longer follow-up period and more frequent visits from the consultants potentially could have increased the sustainability of the intervention.
- A high use of temporary workers limited the implementation of solutions and sustainability of the changes.

Facilitators

- The most important factor for the successful implementation of this worker participation approach and the positive outcome was the close focus of the participatory elements on the workers' core tasks (caring for the children). Starting with the core tasks, workers were not only asked to identify hazards, but to also identify those they consider most hazardous, that is, where the need for changes is highest, as well as to generate solutions that are meaningful and relevant to them. This focus on the core tasks made the approach and generated solutions highly relevant to the workers.
- Childcare workers made decisions regarding their work organisation and discussed learning strategies for the children and new initiatives on a daily basis. This pre-existing high level of autonomy in planning, organising and distributing work is conducive to the success of the participatory process because the workers were already familiar with and confident in many of the intervention activities.
- As the intervention covered how to continue a process of identifying new risk factors and solutions in the future, this should help the long-term sustainability of the intervention.

Lessons learned

- Low-cost workshops conducted during working hours can reduce pain-related sickness absence.
- A close relationship between the new intervention and core operations increases the participation of workers and generates better solutions.
- The intervention can reduce pain-related sickness absence, but in the presented case not pain. This indicates that following the intervention, workers are more comfortable working despite possible pain.

Transferability

The participatory intervention is directly transferable to other childcare workers in other countries, regardless of organisation size. The intervention is likely highly relevant to other sectors, provided the focus remains on the tasks selected and prioritised by workers. Training workers in participatory procedures may be needed if workers are not accustomed to involvement in decisions regarding daily operations.

References and further information

Arbejdsmiljø København. (n.d.) *Kroppen i kerneopgaven.* Retrieved 15 July 2021, from https://amk.kk.dk/kroppen-i-kerneopgaven

Det Nationale Forskningscenter for Arbejdsmiljø. (2020). *De ansattes fokus på arbejdsmiljø og faglighed førte til lavere sygefravær i vuggestuer.* Retrieved 15 July 2021, from https://nfa.dk/da/nyt/nyheder/2020/de-ansattes-fokus-paa-arbejdsmiljoe-og-faglighed-foerte-til-lavere-sygefravaer

Scientific publications

Rasmussen, C. D. N., Hendriksen, P. R., Svendsen, M. J., Ekner, D., Hansen, K., Sørensen, O. H., ... & Holtermann, A. (2018). Improving work for the body–a participatory ergonomic intervention aiming at reducing physical exertion and musculoskeletal pain among childcare workers (the TOY-project): study protocol for a wait-list cluster-randomized controlled trial. *Trials*, *19*(1), 1-14.

Rasmussen, C. D. N., Sørensen, O. H., van der Beek, A. J., & Holtermann, A. (2020). The effect of training for a participatory ergonomic intervention on physical exertion and musculoskeletal pain among childcare workers (The toy project)–a wait-list cluster-randomized controlled trial. *Scandinavian journal of work, environment & health*, *46*(4), 429-436. https://www.sjweh.fi/show_abstract.php?abstract_id=3884

In addition, the case description builds on three interviews with the ergonomics consultants and the lead researcher on the project.