

Participatory ergonomics, cognitive behavioral training and physical training for prevention of low back pain

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1. Introduction

A high prevalence of low back pain (LBP) among nurses' aides has persisted over the years despite extensive primary prevention initiatives. Many single-faceted interventions addressing just one aspect of LBP have been carried out at workplaces, but with low success rate. This may be due to the multi-factorial origin of LBP. A single-faceted intervention commonly used for prevention of LBP is to decrease the physical workload with ergonomic interventions such as introducing assistive lifting devices and training of correct lifting postures. However, the effectiveness of such type of interventions in preventing LBP is not convincing. Involving the employees in the planning and controlling a significant amount of their own work activities (participatory ergonomics) has been suggested as a more effective means in preventing LBP. Another single-faceted intervention to prevent and reduce LBP is physical training. The high prevalence of LBP among nurses' aides also calls for secondary prevention that focuses on maintenance of functional activities despite pain, especially since their work is physically demanding. Thus with care work being physically demanding, and the prevalence of pain being high, prevention of kinesiophobia and improving fear avoidance beliefs may also be important. A means for this is cognitive behavioral training, shown to improve measures of coping such as catastrophising and pain-related fear of physical activity. A workplace intervention encompassing all employees with a variety of needs must therefore aim at both primary and secondary prevention of LBP and consist of several components. Therefore, a trial was designed to examine the effect of a multi-faceted workplace intervention consisting of participatory ergonomics, cognitive behavioral training and physical training combined on prevention of LBP among nurses' aides. However, understanding and evaluating the implementation of complex interventions in practice is an important issue for researchers as well as for workplaces and policy-makers. Therefore, the aim of the present study is to describe the implementation of the multi-faceted workplace intervention.

2. Methods

The trial was a stepped-wedge cluster-randomized controlled trial with 4 groups, where the intervention was delivered to the groups along four successive time periods 3 months apart (in total, 4 rounds). The intervention lasted 3 months and integrated participatory ergonomics, cognitive behavioral training and physical training tailored to the target group. In total, 19 sessions were offered to the participants. Local instructors conducted the intervention after having received a standardized training program from researchers. Inspired by existing theoretical frameworks of process evaluation, this study will describe the *degree of implementation* of the content of the trial. The degree of implementation includes 2 elements: 1. *Dose delivered* measured as a) *Fidelity/success criteria* (the amount of intended activities actually delivered by the instructors) and b) *quality* (instructors' self-rated performance) and 2. *Dose received* measured as a) *participants' appraisal of the intervention* and b) *Reach* (participation rate). Dose delivered was measured by questionnaire-based instructor logbooks collected after each session. Dose received was measured by participant questionnaires collected at the end of the intervention and by the instructor logbooks registering participant attendance at each session. Both dose delivered and dose received were transformed into a scale of 0-100, representing the level of compliance with the intended program model of the trial.

3. Results

The trial runs until April 2014. Thus, preliminary results for the first two groups will be described in the following. There were 1074 eligible employees at the workplace from which we randomized 594 employees into 4 groups (group 1 (n=126), group 2 (n=146), group 3 (n=158), group 4 (n=164)). For the first two groups, the dose delivered (the amount of intended activities actually delivered by the instructors) of the intervention was high (~90%). Dose received in terms of the participants' satisfaction with the intervention was high and corresponded to 87-90% being satisfied with the intervention. Preliminary results indicate that the reach for group 1 and group 2 measured by participation rate corresponded to approximately 54% and 60% respectively. Moreover, during the first two rounds of the intervention, there was a total dropout rate of 12%. For the conference updated results will be presented.

4. Conclusions

High quality intervention effectiveness trials for preventing LBP in workplaces with physically demanding work are few, and mostly unsuccessful. Part of the reason for negative results may be that most previous interventions have been carried out as single interventions. However, lack of implementation of the intervention can also contribute to the low effectiveness. A process evaluation measuring dose delivered and dose received constitutes important knowledge of the implementation of a trial. Moreover, the process evaluation will contribute to measure each of the strings of the multi-faceted intervention and examine whether the implementation of each string is equally successful. Therefore, the current study is designed to measure the implementation of a multi-faceted intervention and provide knowledge of prevention of LBP in workplace settings among high-risk groups such as nurses' aides.