Environment and Public Health Research 2025, 3(1), 2323.
https://doi.org/10.59400/ephr2323

Article

Evaluating the implementation of an integrated work health intervention among cleaners in Denmark: Challenges and lessons learned

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CITATION

Poulsen VR, Andersen AJ, Mortensen OS, et al. Evaluating the implementation of an integrated work health intervention among cleaners in Denmark: Challenges and lessons learned. Environment and Public Health Research. 2025; 3(1): 2323. https://doi.org/10.59400/ephr2323

ARTICLE INFO

Received: 23 December 2024
Accepted: 26 January 2025
Available online: 18 February 2025

Abstract: Introduction: Work-related diseases and injuries represent a rising global health challenge, with 2.9 million deaths attributed to work-related causes in 2019. Work-related risk factors and diseases are unequally distributed across occupational groups, with cleaners identified as a vulnerable occupational group. Integrated approaches combining the prevention of disease and promotion of health in work health interventions have been developed. This process evaluation aims to assess the implementation of the Integrated Approach to Health, Wellbeing, and Productivity at Work (ITASPA) intervention. **Methods:** The ITASPA intervention was implemented at two workplaces among cleaners in Denmark. At each workplace, a committee of employees and line managers was formed to develop initiatives to prevent work-related injuries and diseases and promote workers' health, safety, and well-being. Using the British Medical Research Council's framework, this process evaluation assessed the implementation through reach, dose, fidelity, adaptations, mechanisms of impact, and contextual factors. Data from focus group interviews and field notes were utilized to evaluate the implementation. **Results:** A total of 91 cleaners provided data, and three workshops were held at each workplace. Lack of information about the intervention and motivation challenged the implementation. Furthermore, unwanted power dynamics were unintended consequences of the intervention. Contextual factors, such as many replacements, time pressure, and the absence of managers, challenged the implementation and fidelity. **Conclusion:** Integrated approaches to work health interventions among employees with short or no education can positively impact employees' health, well-being, and safety if comprehensively implemented. However, attention should be given to unintended power dynamics arising from participatory approaches and the importance of management during implementation. Future interventions may benefit from increased attention to such factors to enhance long-term sustainability as well as realist evaluation approaches for more comprehensive evaluations of contextual factors. **Trial registration:** ITASPA was retrospectively registered at Clinicaltrials.gov on the 19 May 2023 (NCT05866978).

Keywords: complex intervention; health promotion; integrated approach; prevention of work-related disease; process evaluation; work-related diseases; work environment; workplace intervention

1. Background

In 2019, 2.9 million deaths were attributed to work-related causes globally, with vulnerable groups such as cleaners facing disproportionate risks [1]. This marks a 26% increase from the 2.3 million deaths recorded in 2014 [1]. Of these deaths, 2.58 million were attributed to diseases and 0.32 million to injuries [1]. Additionally, 180 million

disability-adjusted life years (DALYs) worldwide are linked to work-related factors [1]. In Europe, musculoskeletal disorders (MSDs) are the most common occupational disease, affecting nearly 40 million workers [2]. In Denmark, the prevalence of work-related MSDs has remained stable since 2012 [3], while mental exhaustion linked to psychological factors in the work environment has increased, highlighting the urgent need for enhanced prevention efforts [3].

Work-related risk factors and diseases are not distributed equally across all occupational groups [4]. Compared with other occupational groups, cleaners experience high physical demands such as prolonged standing and walking [5], and higher rates of cardiovascular disease [6], type 2 diabetes [7], and MSDs [8,9]. Despite several initiatives, including ergonomic adjustments to reduce physical work demands, preventive efforts have not had the intended effects, particularly among short-educated employees in physically demanding jobs, such as cleaners [5,10,11]. Previous workplace health interventions have often focused either on health promotion [12–14], or on the prevention of work-related risk factors for injuries and disorders [15]. However, single-faceted approaches such as ergonomic adjustments have often been insufficient, particularly for this population [5,10,11]. Instead, health organizations now advocate for better integration of traditionally separate worker health efforts [16–21].

Integrated workplace health interventions that combine the prevention of work-related safety and health hazards, and of injury and illness to increase worker well-being have shown promising results [15]. The American Total Worker Health (TWH) program, launched by the National Institute for Occupational Safety and Health (NIOSH) in 2011, aims to integrate prevention and health promotion into existing workplace policies, programs, and practices [22]. In addition to TWH, the Australian Workhealth Improvement Network (WIN) further emphasized systematic data collection, evaluation, and knowledge sharing between workplaces [23]. The results of WIN indicated improvements in employee safety culture, mental and physical health, and a reduction in MSDs [23]. Despite these successes, further scientific evaluation of integrated approaches is needed [22].

Drawing on the TWH and WIN frameworks, the Integrated Approach to Health, Wellbeing, and Productivity at Work (ITASPA) intervention was developed and implemented at two workplaces among cleaners in Denmark [24]. The ITASPA intervention was based on a participatory approach, where worker committees at each workplace were formed and trained to develop, monitor, and measure activities aimed at preventing work-related injuries and diseases and promoting health, safety, and well-being [24]. Key components included workshops and network meetings across workplaces. As ITASPA is a complex intervention [25], we employed the British Medical Research Council's (MRC) framework for the evaluation of the intervention [26].

2. Methods and materials

2.1. Aims of the study

This study is a process evaluation of the ITASPA intervention. The aims of this study were as follows:

- To investigate the implementation of the ITASPA intervention in terms of dose, reach, fidelity, and adaptation.
- To identify the mechanisms of impact: How the intervention did and did not produce change.
- To analyze how context affected the mechanisms of impact and implementation.

2.2. The ITASPA intervention

2.2.1. Intervention design

The ITASPA intervention was implemented via a stepped wedge design, where all employees received the intervention and served as their own controls, mimicking a randomized controlled trial (RCT) [24].

2.2.2. Recruitment and setting

The ITASPA intervention was implemented at two Danish workplaces among cleaners from May 2021 to September 2022. Workplaces were chosen based on their willingness to participate in the scientific evaluation and carry out ITASPA initiatives during paid work time.

2.2.3. Enterprise and organization

At both workplaces, cleaning was the primary task, and both were part of the same parent company; therefore, all the cleaners were employed under the same conditions. One workplace involved hospital cleaning, with a shift around the clock, whereas the other workplace involved cleaning teaching facilities, offices, and laboratories during day shifts. Both workplaces employed a combination of permanent and temporary staff.

2.2.4. The ITASPA committee and methodology

A participatory approach was employed in the development of intervention initiatives aimed at improving employee health. To facilitate this, an ITASPA committee, representing the existing cooperative work environment fora, the workers, i.e., regular cleaners, union and safety representatives, relevant staff functions (HR, etc.), and a designated committee chair, was established at each workplace. Meeting every three months with the project manager, the committees reviewed psychosocial, physical, and safety challenges, using these insights to adjust or create new initiatives. In between workshops, activities were implemented across three phases, each lasting approximately three months (**Figure 1**).

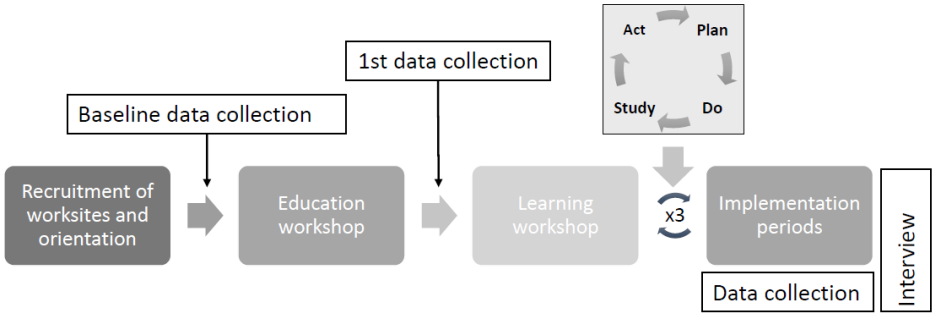

Figure 1. Overview of intervention key components and data collection timing.

The committees utilized the SMART framework (Specific, Measurable, Achievable, Relevant, Time-Bound) and PDSA cycles (Plan–Do–Study–Act) to systematically design and refine initiatives as described in the project protocol [24].

The integrated approach in the ITASPA stated initiatives to be developed and coordinated in line with existing health policies, procedures, and practices to create sustainable changes in the work environment to attain the aims of the project.

2.2.5. Network meetings

During the implementation period, the ITASPA committees joined a network with the project managers. The network meetings aimed to ensure cross-workplace feedback, strengthen the intervention's sustainability, and allow for the exchange of best practices and feedback on initiatives across participating workplaces.

2.3. The logic model of the ITASPA intervention

The ITASPA intervention included several components and methodologies, which were assumed to lead to improved health and safety for workers. The Logic Model (**Table 1**) presents the theoretical framework underlying the intervention, outlining key assumptions about how these components were expected to function and guiding the research questions [26].

Table 1. The ITASPA Logic Model illustrates the intervention inputs and activities, expected outputs, outcomes and impacts, and contextual factors expected to influence the implementation. The black text indicates the inputs, activities, outputs, outcomes, and impacts that are addressed in this process evaluation, whereas the grey text indicates the outcomes and impacts that are addressed in the quantitative effect evaluation of the project.

Inputs	Activities	Outputs	Outcomes	Impact
Funding of project managers. Two workplaces are recruited.	1. All employees are introduced to the ITASPA intervention and will agree/not agree to participate. 2. ITASPA committees are formed at each workplace and trained in the methodology to develop, monitor, and measure tools. 3. The committee participates in workshops to develop initiatives to improve the health of all employees based on their own observations of work health challenges. 4. Initiatives are implemented over three months. 5. Questionnaire data and objective measurements of blood pressure, BMI, and fat% are collected before the intervention and after each implementation period. 6. Committees receive support through network meetings with project managers and counterparts from the other workplace. 7. Committee chairs receive support from the project managers. 8. Steps 3–6 are repeated three times within 12 months.	ITASPA committees develop and implement health initiatives by use of the methodologies. Employees support initiatives and adapt to changes as outlined in the initiatives.	Initiatives are integrated into existing organizational structures and local work health policies. Employee health improves in terms of reduced musculoskeletal and mental health disorders, and injuries.	Organizational impacts Workplaces adopt the methods and tools to continuously work on the employees' health. Initiatives, developed by the committees, are sustainable and each workplace continues developing new initiatives and adjusting existing ones. Sickness absence decreases and productivity improves. Individual impact Employees experience improved physical and mental health, and fewer injuries.

Context: Resources (staff, time, money, and facilities), organizational culture, leadership commitment and support, workplace policies, the social environment, task complexity and demands, employee schedules, preexisting workplace health challenges, and workers' acceptance.

Mechanisms: Mechanisms expected to influence the expected outcomes and impacts included the interaction of committees with the intervention, fostering ownership and trust, support from managers, integration with core tasks, and adaptability to local conditions, which are crucial for achieving intended outcomes.

2.4. Evaluation framework

As ITASPA is considered a complex intervention [25], we used the British Medical Research Council's (MRC) framework for the process evaluation of complex interventions [26]. The MRC framework was selected due to its systematic approach. It is widely recognized in health research for ensuring rigorous evaluation, identifying key factors that influence implementation, and why and how the intervention works [26].

2.5. Data collection

The timing of data collection is shown in **Figure 1**. Nine and six committee members, respectively, participated in the focus group interviews. These interviews were conducted by the same researcher and two student assistants. The interviews focused on the committees' roles in the implementation process, ownership and trust, the support received from (project) managers, organizational factors, and integration with core tasks (Appendix **Table A2**). The focus group interviews lasted 50 and 71 min, respectively, were digitally recorded, and were subsequently transcribed verbatim in Danish. The interview guide for the focus groups is described in the Appendix **Table A2**. Participants' demographics were obtained from a screening questionnaire. The data collection for the effect evaluation was conducted at baseline and after the first intervention period during individual health checks (**Figure 1**) as described in the protocol [24].

2.6. Process evaluation measurements

Using multiple data sources, we examined key evaluation aspects: reach, dose, fidelity, adaptation, context, and mechanisms of change, as detailed below [26]. **Table 2** provides an overview of the ITASPA elements, data collection methods, and number of participants in each group.

Table 2. Overview of the data sources and participants.

Data sources	Process evaluation	Participants
Screening questionnaire.	Reach and dose.	The screening questionnaire was completed by 98 participants, whereas 91 indicated that they wanted to participate in the scientific evaluation of ITASPA.
Health checks.	Reach and dose.	In total, 63 showed up for the baseline health checks and filled out questionnaire data, 59 participants showed up at the second and third health checks, and 54 and 46 showed up for the fourth and fifth health checks, respectively.
Workshops, and PDSA and SMART reporting forms.	Reach and dose; Fidelity and adaptations.	Three workshops were held at each workplace; hence, a total of six PDSA and six SMART reporting forms were filled out.
Focus groups.	The mechanisms of impact and context.	A total of eight committee members and a non-member participated in a focus group interview at one workplace. At the other workplace, four committee members, one regular employee, and a manager participated in a focus group interview.

2.6.1. Reach

To measure reach, which refers to the extent to which the intended target group engaged with the intervention, we calculated the number of participants who agreed to participate in the scientific evaluation. Additionally, we tracked attendance at the five data collection sessions conducted during health checks.

2.6.2. Dose

Dose, which refers to the degree to which the intervention activities are implemented, was evaluated by analyzing field notes from workshops and meetings and reviewing administrative data on the number of workshops executed, network meetings held, and the utilization of the methodology (i.e., the number of filled-out PDSA and SMART forms).

2.6.3. Fidelity and adaptations

Fidelity refers to whether the intervention is implemented as originally planned [26], whereas adaptations denote modifications made to fit the specific context [26]. In the ITASPA intervention, the integrative and participatory approach allowed flexibility and a high degree of adaptation and variation in implementation across workplaces. Nonetheless, the processes expected to lead to the intended outcomes remained relatively standardized [27]. As a result, fidelity was assessed by evaluating the extent to which the methodologies were followed, including the successful execution of planned workshops and network meetings and the active involvement of employees in the development of initiatives, as outlined in the study protocol [24]. Both fidelity and adaptations were evaluated through the analysis of field notes from workshops and the PDSA and SMART forms.

2.6.4. Context and mechanisms of impact

The mechanisms of impact help in understanding how the intervention produces its effects and how they can be replicated [26]. This involves examining how the participants interact with the intervention and what mechanisms and pathways in the local context create intended and unintended changes.

Mechanisms of impact are influenced by, and in turn, affect, the local context [26]. For example, the physical and psychological work environment, the organization of work, and the demands of work tasks are likely to play significant roles in the mechanisms leading to the adoption of integrated intervention elements, thus impacting implementation [22]. Therefore, mapping and describing the context illuminate the pathways that lead to the intervention's outcomes.

The mechanisms of impact and context were investigated through one focus group interview with the committee members at each workplace.

We used Malterud's STC approach for coding and condensing the data [28]. Relevant passages were translated into English. This paper does not aim to cover all the themes and subgroups identified in the systematic text condensation; rather, it focuses on the specific subgroups related to the implementation of the ITASPA.

3. Findings

3.1. Baseline demographics

The participants' demographics are presented in **Table 3**.

Table 3. Baseline characteristics of participants (87 to 90 participants provided baseline data on the selected demographic variables).

Demographic information	***N* (%)**	**Mean ± SD**
Sex		
Male	10 (11.1)	
Female	78 (86.7)	
Missing	2 (2.2)	
Age (years)		45.5 ± 11.52
Missing	3	
Nationality		
Danish	15 (16.7)	
Non-Danish	73 (81.1)	
Missing	2 (2.2)	
Highest obtained educational level		
No education	40 (49.4)	
Completed basic education and apprenticeship training	19 (23.5)	
Short education	4 (4.9)	
Intermediate education	14 (17.3)	
Higher education	4 (4.9)	
Missing	9	

3.2. Reach

At each workplace, a total of five health checks and three workshops were conducted. 98 employees filled out the screening questionnaire, of whom 91 agreed to participate in the quantitative data collection. The number of participants per health check varied due to factors such as staff turnover, sickness absence, pregnancy leave, and terminations (**Figure 2**):

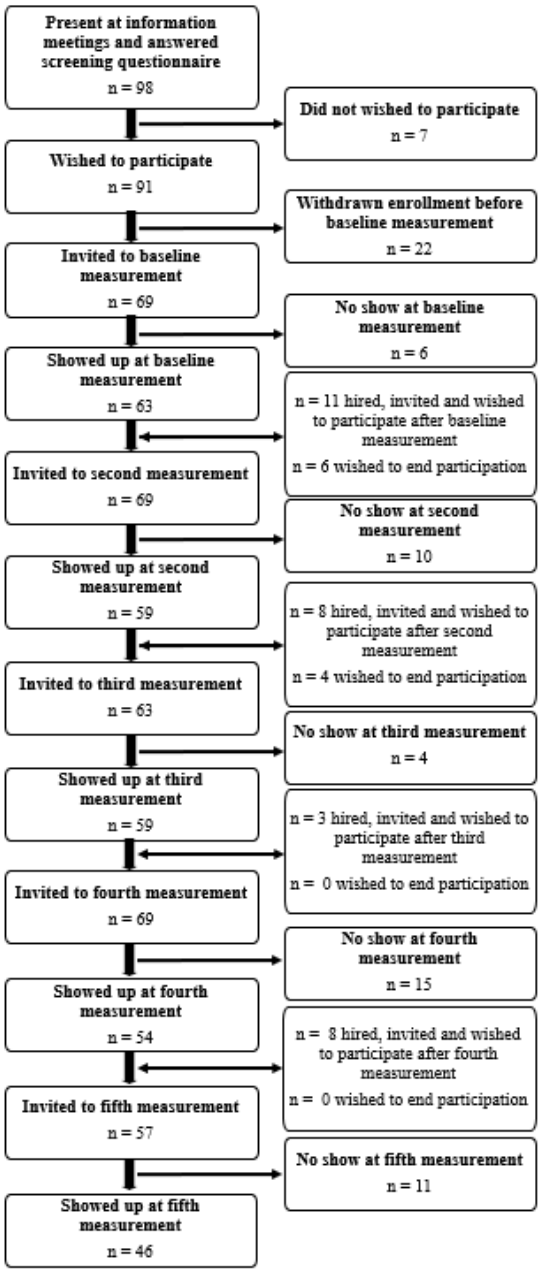

Figure 2. Flow of the participants in the study.

3.3. Dose

All planned workshops were conducted, the ITASPA committees were established, and they developed and implemented several initiatives, as detailed in the supplementary material (Supplementary **Table 1**), using the intended methodologies (PDSA and SMART). This suggests that most of the core activities of the intervention outlined in the Logic Model were quantitatively implemented as planned, at least during the 12 months when the intervention was monitored by the project leaders. Thus, the dose was relatively high.

3.4. Fidelity and adaptations

Both workplaces established ITASPA committees, as planned, to develop and implement workplace initiatives. At the first workplace, the committee developed and

implemented new initiatives in all three workshops, whereas the committee at the second workplace developed and implemented new initiatives in two out of three workshops. Both committees utilized the SMART and PDSA methodologies to develop these initiatives, as detailed in the supplementary material (Appendix **Table A1**).

Following development, the initiatives were implemented and evaluated over three months. However, the involvement of managers was important for continuous implementation at both workplaces, as they were the ones able to allow which initiatives to be implemented. The essential role of managers made the implementation of the initiatives vulnerable during periods when those involved were on sick leave or resigned from their positions, which proved to be the case on several occasions. In these situations, ITASPA seemed to be put on hold, as there was no one to take over related tasks.

Both committees developed initiatives to enhance the social work environment. Additionally, in one of the workplaces, a physical activity initiative, encompassing a weekly exercise session, was initiated; however, participation varied. While initiatives to enhance the social work environment were more consistently maintained throughout the entire intervention period, those aimed at reducing musculoskeletal pain and safety were not as successful in terms of long-term implementation. The lack of support from employees for the required changes was due to their time-consuming nature and insufficient alignment with existing routines. However, more mechanisms also influenced the implementation, as discussed below.

The committees at both workplaces suggested changes, such as larger trash cans and new cleaning machines, but these initiatives could not be implemented due to organizational budget restrictions and top management's decisions. For further details on the initiatives, please refer to Appendix **Table A1**.

3.5. Context and mechanisms of impact

The findings from the systematic text condensation (STC) analysis are presented below. We identified four themes related to the context and mechanisms of the impact of the ITASPA in the two workplaces, which were arranged into 10 subgroups (**Table 4**).

Table 4. Systematic text condensation; themes and subgroups.

Theme	Subgroup
Communicative barriers in the implementation process	(1) Lack of clear information about the intervention (2) Language barriers
Lack of visible impact and concrete tools undermined motivation	(3) Lack of visible changes (4) Tools are not concrete enough
Power dynamics are shaping new roles of members of the ITASPA committee.	(5) Uncomfortable position of power (6) Lack of responsiveness from "regular" employees (7) Feeling forced to be a part of the committee
Staff turnover and time pressure hindered implementation.	(8) Barriers to transferring knowledge across staff replacements (9) Time pressure and increased workload (10) Many replacements of cleaners challenge continuity

3.5.1. Communicative barriers in the implementation process

The first theme illuminated the findings regarding fidelity and adaptations. As the analysis of the PDSA cycles highlighted, some of the initiatives were carried out as planned, but implementation barriers were also observed.

The general communication was found to have an impact on the implementation of initiatives within the ITASPA intervention, especially the lack of general information about the intervention, and the justification of intervention initiatives was an experience the participants in the focus groups shared:

Participant 3: *"But also in general, I also think that if we had been told what you were actually going to use it for in general. That it's research that you can use in other places as well, then there would probably have been a slightly different understanding of it."*

Interviewer 1: *"Yes, of course."*

Participant 2: *"Also because we didn't even get any justification when we started. For this or that."*

Participant 3*: "We actually did not know anything about it, we were just asked to come to a [information. Red] meeting, and then it just started. We didn't get anything at all, in that sense."*

Moreover, the purpose or function of the committee was not communicated clearly, according to both members of the committees and non-members at both workplaces. First, the focus groups highlighted members of the committees had not been informed about their role in the ITASPA committee; thus, they did not know that the committee was responsible for the implementation of the intervention initiatives. Internally in the committee, the lack of role clarity was linked to the feeling of confusion, and along with the fact that participation was not voluntary, the committee members expressed that being involved in the intervention had been frustrating.

Across workplaces, it was also clear that there was a feeling of lack of information among the non-members in terms of not knowing what was expected of them, which resulted in a suspicion of the "new" behavior of the ITASPA committee members.

Another factor that defined communication was language barriers between colleagues. Even though this was a general challenge in employees' workdays, language barriers also affected the implementation of the intervention initiatives. As two participants said;

Participant 1: *"It's like they're not listening. Either they're not listening, or it's because they don't understand even though they say they do."*

Participant 2: *"But it's a problem, you could say the language."*

Participant 1: *"Yes, it's the language."*

Several participants highlighted that different languages and the lack of ability to communicate in Danish among colleagues was a barrier in their committee work, as it made them feel like they were wasting time explaining things about work tasks and intervention initiatives that were not understood anyway. It was also highlighted that speaking and understanding Danish is part of the contract, so colleagues should be expected to understand what is being said.

Overall, unclear communication, both between the ITASPA committee and employees and among colleagues with language barriers, may have hindered the implementation of the intervention.

3.5.2. Lack of visible impact and concrete tools undermined motivation

One feedback on ITASPA initiatives that was common among participants was the lack of visible impact of the project. Several participants emphasized that the lack of visible impact influenced their motivation to take part in the new initiatives.

> Participant 3: *"But I also think that many have left and don't want to participate because they don't feel that we have gained anything from it. I had the idea that we might have gotten something out of it, that there were some things we could change. But it's the same questions we get, and that's fine, but we don't get anything out of it, we haven't been told whether we've changed for the better or worse, or what we can use it for. And." (Interrupted by informant)*
>
> Participant 2: *"We kind of lack a result."*

This perception of "lack of visible results" was a key factor in declining motivation. The participants requested more insight into an actual change or more concrete evidence of a poor work environment. It was also noted that the project had been running for a long time, which was why some employees were tired of the project and dropped out of health checks.

Another challenge was the absence of concrete tools for improving work conditions. The participants indicated that they wanted more practical solutions that they could implement themselves, but they felt that the ITASPA methodologies were too abstract or not directly applicable.

In summary, the declining motivation to engage with the ITASPA initiative was driven by a combination of factors, including the perceived lack of visible changes, project tiredness, and the absence of concrete tools. These issues hindered sustained engagement with the initiatives and led some employees to stop their participation altogether.

3.5.3. Power dynamics shaping new roles of members of the ITASPA committee

In addition to a lack of information about the ITASPA project and its initiatives, members of the ITASPA committee highlighted that they experienced misunderstandings in their new role as members of the committee. Specifically, they felt that they were seen as having a position of power in implementing new initiatives. As this new role was not based on voluntary participation, a negative unintended outcome of the participatory approach was that more committee members expressed they would not have agreed to be a part of the committee if they had been asked again.

> Participant 3 [member of the ITASPA committee]: *"Well, I've been working with occupational working environment, so I've been able to do it. But they've never seen me in that position, because it's always just been... I've felt bad about that because I don't think... and I wasn't asked either. I felt a little annoyed about it. I would have done it, but it's just not me in that way, coming out sometimes and having to hit them over the head."*

Participant 2 [non-member of the ITASPA committee]: *"No, and that's what I'm saying. It's us in the house, we hadn't, what can I say, we hadn't been told that you were the ones to come and hit us on the head. We weren't told that from anywhere [...]"*

Moreover, members of the ITASPA committee implied that the lack of recognition of the ITASPA committee from the "regular" employees resulted in a sense of unresponsiveness to the new initiatives:

Participant 1: *"They find it really annoying."*

Interviewer 1: *"That you have to make changes or what do they think?"*

Participant 1: *"Yes, but also that they may feel that, I don't want to say that you're attacking them, but they have their rhythms. Of course, the carts should be the same all over the world and stuff like that, but many times I also think that you come in and they feel that we are keeping an eye on them, and at the same time, they want their cart to, you know. They're used to it, we're creatures of habit in this house, so there's... if you start changing too much, you'll make them feel and hear it too."*

Employees were described as creatures of habit, which made it difficult to implement specific initiatives. It was also highlighted that employees already have existing habits, routines and rhythms that challenge changes in work routines.

Overall, our findings highlight that the participatory approach utilized in the ITASPA intervention changed the existing power dynamics and hierarchies in the context where it was implemented. The committee expressed that the fact that participation in the implementation was not voluntary contributed to an experience of being placed in an unwanted power position over colleagues. Greater involvement of managers in the implementation phase combined with comprehensive information to non-member employees may have prevented such unintended consequences.

3.5.4. Staff turnover and time pressure hindered implementation

Concerning context, one theme especially recurred and was related to the many replacements, which was generally a large part of the work structure at both workplaces. This is important when evaluating the implementation of the ITASPA at these two workplaces. As presented above, the lack of information was a barrier to implementation, and several participants highlighted that the replacers in particular lacked information regarding work tasks:

Participant 1: *"But it's very, very often, replacements and it's difficult to get a lot of the information we receive on a regular basis. We don't always reach the replacements, and that's often where things go wrong."*

Participant 2: *"But even if they are in and do it on the weekends, for example, they still don't get the same information that we get at the meeting on Thursday, for example. They don't get that information this weekend, because they [persons from the ITASPA committee] can't go around and tell everyone again."*

This illustrates a clear understanding that replacements were not well informed about mandatory work tasks or the ITASPA initiatives. Moreover, as indicated in the quote above, the limited time to perform work tasks hindered the committee members

from “telling everyone again”. The work pressure related to the frequent replacement of employees is also illustrated in the quote below:

> Participant: *“One of the things we probably think about a lot when we have a fixed work area is when replacements come in. Some are fantastic, others are less good, and... I certainly … When there have been some less good ones in, then we have to run harder to achieve all that if we have a standard that we want it this way and that way. And of course, the replacement can’t reach our standard, they won’t be able to because they’re in so many departments, different ones. So...”*

Overall, the many replacements were a stressor in the work environment, potentially tearing on time resources, which may have challenged the implementation. Furthermore, frequent staff turnover was a major barrier to consistently implementing the initiatives, as the replacements were not always informed about the changes. Nevertheless, as replacements were a substantial part of the work structure, other strategies to ensure proper and consistent information of initiatives to new staff or replacements might have been a method to overcome these implementation barriers.

4. Discussion

4.1. Summary of findings

In this process evaluation of the ITASPA, we examined implementation by assessing reach, dose, fidelity, adaptations, mechanisms of impact, and contextual factors. Our results revealed that the ITASPA intervention had a high fidelity and would adapt well to the local context. We also observed that lack of clear communication, lack of finances, and disengaged managers challenged the implementation. Finally, we observed that the participatory approach was successfully applied, but it also yielded an unexpected imbalance in power relationships.

4.2. Findings and previous literature

Our quantitative scientific evaluation and health checks successfully reached a total of 91 cleaners employed at the two enrolled workplaces. However, the number of participants decreased over the intervention period, indicating a lower reach. Despite this drop-off, it is plausible that many unevaluated employees were indirectly reached by the intervention since the ITASPA was implemented organization-wide. Moreover, most of the key intervention elements outlined in the Logic Model were quantitatively implemented as planned, indicating a high dose.

Along these lines, fidelity was relatively high in the ITASPA, as the constant components were implemented as intended [27,29]: The committees followed standardized processes for change in terms of including members at more organizational levels and developing and implementing health initiatives through the use of PDSA and SMART methodologies [23].

However, in complex interventions, assessing fidelity is not straightforward [30]. Some interventions, such as the ITASPA, are designed to be adaptable to local circumstances, leading to widely varied practices between intervention sites. The evaluation of fidelity in such interventions thus also requires the identification of

variable components [27,29]. The participatory approach utilized in the ITASPA ensured that all intervention initiatives were developed by the employees themselves, focusing on work-related challenges that they considered relevant to address. Consequently, all intervention initiatives were adapted to the local context of the two workplaces, leading to varied practices between intervention sites, in line with the underlying intervention theory, which supports relatively high fidelity.

With respect to context-specific initiatives, we found that initiatives aimed at improving the social work environment were more likely to be successfully implemented than initiatives targeting behavior change to reduce musculoskeletal pain and improve safety. Furthermore, initiatives requiring top management decisions and financial resources were less likely to be effectively implemented. The latter findings align with the evaluation of the WIN program, which revealed that a lack of leadership support and commitment, lack of funding or access to resources, and lack of capacity in smaller workplaces were all barriers to implementation [23]. Nevertheless, future studies may benefit from a more comprehensive investigation of the variable components of the ITASPA intervention, i.e., a more comprehensive evaluation of the developed initiatives at each workplace.

Based on our systematic text condensation (STC) analysis, we investigated the mechanisms and role of context, which enabled us to understand how the intended outputs and outcomes, outlined in the logic model, were achieved. One of the outputs prescribed in the Logic Model was that 'Employees support initiatives and adapt changes as outlined in the initiatives' (**Table 1**). This output was only partially achieved. The STC analysis revealed that a lack of communication between the committee and the remaining employees resulted in a lack of responsiveness to changes and limited support of activities. Similar tendencies were observed in the evaluation of WIN, where the knowledge, skills, and resources of the committees were crucial factors for facilitating the implementation of activities [23]. Furthermore, the complexity of the WIN program was evaluated to create implementation barriers, and this may have also been the case in the ITASPA intervention [23]. Our STC analysis highlighted that a lack of information about the purpose of the intervention posed a challenge to the impact of the committee and, consequently, hindered the overall implementation. Concerning facilitating mechanisms, we found that the involvement of managers was essential for overcoming a lack of motivation and support from employees. However, the high staff turnover challenged the support of managers and hindered the implementation. This finding is supported by a systematic review showing evidence that strong manager support is the most important facilitator of the implementation of work health programs [31].

There is evidence that integrated workplace interventions can decrease the prevalence of sickness absence, leading to increased productivity and an improved economy of the organization [32], and that such positive changes are likely to be sustainable [33–35]. Our findings suggest that a participatory approach can be effectively used to develop and implement contextually adapted activities aimed at improving workers' health. However, employee engagement declined over time, e.g., due to a lack of clear communication, frequent staff turnover, time pressure, and lack of immediate and visible changes. This finding aligns with the observed decreasing reach and a systematic review that highlighted a lack of resources as a commonly

reported implementation barrier in work health programs [31]. Thus, within the 12 months the intervention was monitored, it was evident that the intervention initiatives were not sustainable.

Finally, it is worth noting that our findings illuminate some unintended consequences of the ITASPA intervention. First, the participatory approach and establishment of the ITASPA committee created undesirable power dynamics between the employees and the committee, which was not described in the Logic Model. This mechanism challenges employees' support for changes. This finding aligns with the evaluation of the WIN program, which also recognized workplace culture and resistance to change as common barriers to implementing integrated approaches [23]. Interestingly, the evaluation of WIN also highlighted that the workplaces had varying levels of organizational readiness and available resources, affecting their involvement with the program and its impacts [23]. While this was not directly addressed in our analyses, we cannot rule out the possibility that low levels of organizational readiness may have negatively affected the uptake of intervention activities at the participating workplaces.

4.3. Strengths and limitations

A strength of this study is that we used both qualitative and quantitative data from various sources to evaluate the implementation process of the intervention. By triangulating notes and data from the focus groups, we were able to evaluate the implementation of the ITASPA from several perspectives, including fidelity in terms of standardized processes, such as methodologies, core activities, and participatory approaches, as well as flexible processes that allowed for contextual adaptations.

Another strength is that we included both members of the ITASPA committee and a non-member in each focus group to represent more perspectives. However, we cannot rule out the possibility of selection bias due to this limited selection of participants. More qualitative data collected from regular employees would have illuminated their perspectives more comprehensively, especially the findings regarding power dynamics and information sharing. Therefore, we strongly recommend that future studies collect more data among employees who are not members of the committees.

A major pitfall of this evaluation was that we did not separate our data sources according to the workplace; thus, we did not comprehensively assess how the intervention components interacted with each local context. Moreover, owing to the inclusion of multiple data sources, the analyses only scratched the surface of the intervention mechanisms. A realist evaluation method might have been useful for more comprehensively exploring the interplay between mechanisms of change and varying local contexts [36].

Furthermore, we did not evaluate any measurements of effects in this process evaluation. Additional analyses of the questionnaire data would have illuminated the effect of the degree of implementation. By including more data on effects, we would have been able to evaluate the outcomes and impacts as outlined in the Logic Model more comprehensively. In future planned effect evaluations of the ITASPA, such findings will be explored.

Finally, another limitation of this study is that we conducted only two focus group interviews after the implementation of the intervention. This cross-sectional qualitative data provides only a brief snapshot of employees' experiences with the intervention. In contrast, longitudinal qualitative data collection before, during, and after the implementation of the intervention would have more comprehensively shed light on employees' ongoing experiences with the intervention activities, organizational adaptation, mechanisms of influence, and contextual factors. Thus, similar interventions may benefit from such data collection methods in the future.

5. Conclusion

Integrated approaches to work health interventions among employees with little or no education have the potential to positively impact employees' health, well-being, and safety if comprehensively implemented. Despite the lack of sustainability in certain activities, our evaluation demonstrated that the committees effectively utilized standardized processes to develop initiatives targeting employer health. However, contextual factors and unintended mechanisms of change challenged continuous implementation and thereby the sustainability of intervention outcomes. Our findings underscore the importance of clear communication, managerial involvement, and the need for flexible, context-sensitive interventions that can adapt to workplace-specific challenges to support sustainable changes. Moreover, our findings offer insights into the field of participatory approaches. When possible, co-creation in work health interventions should be based on voluntary participation to mitigate potential power imbalances that may arise when employees are assigned the responsibility of implementing behavioral changes among their colleagues. Future interventions may benefit from increased attention to these factors to enhance long-term sustainability and the overall effectiveness of workplace health initiatives. Nevertheless, owing to limitations in our choice of data sources and evaluation frameworks, it was not possible to comprehensively address the interplay between context, implementation, and mechanisms of change. Therefore, future evaluations may benefit from realist evaluation approaches and more comprehensive qualitative data to sufficiently evaluate the ITASPA.

Author contributions: Conceptualization, OSM and MK; methodology, VRP and MK; software, VRP; validation, OSM, MK and MBS; formal analysis, AJA and VRP; data curation, MK; writing—original draft preparation, VRP; writing—review and editing, OSM, MK, AJA and MBS; visualization, MK and MBS; project administration, MK; funding acquisition, OSM and MK. All authors have read and agreed to the published version of the manuscript.

Acknowledgments: The authors thank the employees, ITASPA committee members, and managers who participated in the study.

Funding: The project was funded by two grants, one from The Research Foundation for Health Science in Region Zealand [grant number R22A547], and one from the Danish Work Environment Research Foundation [grant number 20225100776]. Neither of the funders had any role in the development of the study design, nor the

protocol for data collection, analysis, interpretation of results, writing of the manuscript, or decision to submit for publication.

Ethical approval: The study was approved by the Danish Data Protection Agency (journal number REG-034–2021) and the Ethics Committee for the Region Zealand in Denmark (journal number SJ-927) and was conducted in accordance with the Helsinki Declaration. Written informed consent was an inclusion criterion for participation in the scientific evaluation. All consenting participants were issued a unique identification number for confidentiality, and all data is stored securely as per ethical requirements. ITASPA was retrospectively registered at Clinicaltrials.gov on the 19th of May 2023 (NCT05866978).

Availability of data and materials: The datasets generated and analyzed during the current study are not publicly available due to ethical requirements but are available from the corresponding author on reasonable request.

Consent for publication: Not applicable.

Conflict of interest: The authors declare no conflict of interest.

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Appendix

Table A1. Overview of activities developed in workshops.

Workshop	Workplace 1	Workplace 2
1	**Primary aim:** Well-being of employees. **Secondary aim:** Reduction of sickness absence. **Content:** To increase psychological safety, this activity aimed to increase the courage of employees to express criticism. A mailbox was made where employees were encouraged to drop notes about suggestions for changes in the work environment. The ITASPA committee would collect the notes and inform the managers. The initiative 'Open door' was developed, where employees would meet and discuss work environment and work-related issues without any managers being present. **Output:** Eight notes were collected from the mailbox, and six employees showed up at 'Open door' and discussed work tasks. However, the notes and discussions were considered irrelevant by the managers. After some time, the mailbox was removed.	**Primary aim:** Consider your colleagues. **Content:** To improve the social work environment, emphasis was placed on remembering to say "hello" and "goodbye" to colleagues and making the carts ready for the next employee who was going to use them. Checklists were made for the carts. **Output:** More employees greeted each other, creating a nice atmosphere. More carts were neat and tidy compared to before. However, employees felt they were being watched, and it took extra time to prepare the carts.
2	**Primary aim:** Reduce musculoskeletal pain and stress. **Content:** To reduce musculoskeletal pain, the ITASPA committee would investigate the use of cleaning machines and devices and consider buying more. One member of the ITASPA committee wanted to initiate exercise workshops for all employees. The ITASPA committee would investigate the possibilities of getting a masseuse for the workplace. **Output:** The exercise workshops were conducted twice a week, and 7–8 employees participated each time. However, employees did not feel they had the time to participate. Instead of focusing on machines and devices that would reduce workload, the managers and ITASPA committee considered implementing bigger trash cans instead of many small ones.	**Primary aim:** Better safety and reduction of musculoskeletal pain. **Content:** Employees were told to inform managers when the Velcro on mops needed to be changed to reduce workload. More mops in different sizes on each cart to ensure better working positions. Better moistening and changing of mops to improve cleaning quality. Dosage of soap and using the correct amount to increase safety. Eyewash and safety glasses should be available for all employees, possibly on the cart to increase safety. **Outputs:** the managers still found poor Velcro on carts. More mops on carts were implemented, however, using smaller-sized mops increased time pressure. Regarding moistening and dosage of soap, employees continued to do as usual. Eyewash was bought; however, employees did not experience a need for it on the carts as there was eyewash in many rooms.
3	No new initiatives were discussed, but the ITASPA committee continued working on bigger trash cans.	**Primary aim:** Reduction of musculoskeletal pain and improvement of the social work environment. **Content:** The ITASPA committee would ask a physiotherapist to come and initiate exercises in the lunch breaks for 5-10 minutes to prevent pain in muscles and do something fun together. **Output:** As the intervention finished, this initiative was not evaluated.

Table A2. Interview guide example: Focus Group Interview with ITASPA Committee and Employees [workplace 1].

The interviews were structured around the following questions:
How did employees experience that the ITASPA committees developed and implemented change-making initiatives at the workplace?
How have employees experienced being part of an ITASPA committee and the responsibilities and tasks they have had to manage, including developing initiatives, implementing them, and communicating them to other employees?
Have employees experienced that the intervention has contributed to increased health, safety, and well-being?
How did the intervention contribute to the workplace's focus on preventive and health-promoting activities in the work environment and integration with core tasks?

Introduction to the Purpose of the Interview:
Thank you very much for agreeing to participate today. The purpose of this interview is to understand your experiences with the project and to gather feedback on how we, as project managers, can improve our support.
Anonymization: We would like to record the interview to use it for our research. Everything you say will be anonymized, ensuring that no one can identify who said what. Your managers will not have access to any information about who said what.
Practicalities: Since we are recording the interview for later use, we'll aim to avoid talking over each other. Please feel free to say your name before speaking if you wish.
Do you have any questions before we begin?

Theme	Questions
Introduction	***Introduction:*** *Could you please start by stating your name and how long you have worked at [name of company]?* ***Work as a Cleaning Assistant:*** *I'd like to begin by asking how you feel about working as a cleaning assistant here at [name of workplace].* *How do you feel about your tasks? Are they interesting? Why or why not?* *Do you feel happy when you arrive at or leave work?* *How does being a cleaning assistant impact your health/body (both positively and negatively)?* *How does the job fit into your life overall? (Hours, exhaustion, flexibility?)*
Participation in ITASPA (Health Checks)	*You've been part of the ITASPA project for almost a year now – how has the experience been for you?* *What do you think of the health checks? What do you gain from them? Has participating in the health check made you more aware of any aspects of your health or body?* *Do you think about anything after you've had a health check?*
Participation in ITASPA (Initiatives)	*The reason for conducting the health checks is that several initiatives have been introduced in your work, such as: 'Good Morning/Goodbye,' 'Praise colleagues,' 'New mops,' 'Enhanced ladders,' 'Cleaning supplies in the cabinet.'* *What do you think of these initiatives?* *Have you noticed any effects of these changes? For example, on your body or your relationships with colleagues?* *Why or why not?*
Implementation (Practical/Social Context/Peer-to-Peer)	*Now let's discuss the practical side of things: how the implementation of these initiatives has unfolded so far (draw a timeline).* *How have the new initiatives been introduced to you?* *How do you feel the ITASPA committee members have been received by the employees?* *How has it been for you to inform your colleagues about the upcoming changes?* *How have you felt about the new initiatives introduced by your colleagues?* *Have things gone as expected? Have the initiatives been implemented as planned? Do you feel the employees have listened?* *Can you think of anything that could have gone better?*
Ownership and Trust	*How do you generally feel about being involved in making changes at your workplace?* *Do you, the employees, think the proposed initiatives are good ones?* *Were you asked about which initiatives should be implemented or any other aspects of the project?* *Can you discuss any (positive or negative) changes you've experienced as a result of participating in ITASPA?* *What reactions have you observed within the committee throughout the process?* *Have any employees expressed that they did not think this was a good idea?*
Support from Project Managers	*How has it been for you to implement the initiatives after the workshops?* *How have the network meetings worked for you?* *In what ways could we, as project managers, have done more to help you implement these initiatives?*
Organizational Factors and Work Tasks	*Has it been possible to implement the initiatives as you had envisioned, or have there been challenges due to conditions at the workplace?* *Do you think these changes will last long-term?* *Have there been any unexpected side effects?*
Closing	*Thank you very much for participating.*