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Identifying a practice-based implementation framework for sustainable interventions for improving the evolving working environment: Hitting the Moving Target Framework

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ABSTRACT

Our aim was to identify implementation components for sustainable working environment interventions in the nursing assistant sector to generate a framework to optimize the implementation of workplace improvement initiatives. The implementation framework was informed by: 1) an industry advisory group, 2) interviews with key stakeholder, 3) concept mapping workshops, and 4) an e-mail survey. Thirty five stakeholders were interviewed and contributed in the concept mapping workshops. Eleven implementation components were derived across four domains: 1) A supportive organizational platform, 2) An engaged workplace with mutual goals, 3) The intervention is sustainably fitted to the workplace, and 4) the intervention is an attractive choice. The highest rated component was "Engaged and Active Management" (mean 4.1) and the lowest rated was "Delivered in an Attractive Form" (mean 2.8). The framework provides new insights into implementation in an evolving working environment and is aiming to assist with addressing gaps in effectiveness of workplace interventions and implementation success.

1. Introduction

Despite several years of implementation of interventions and policies for improving the working environment among nursing assistants in Denmark, the working environment and health problems in this sector remain high and generate substantial preventable morbidity and costs (Andersen et al., 2012; Holtermann et al., 2010). Challenges with implementing and sustaining changes in the health care sector are well-acknowledged (Greenhalgh et al., 2004; Grol and Wensing, 2004) and therefore knowledge is needed about implementation components that generate sustainable interventions for improving and maintaining a good working environment among nursing assistants.

In building an understanding of implementation components for success, it is important to consider potential cases of failure. Failure may relate to poorly targeted intervention concept or theory (theory failure). Another obvious failure is inadequate implementation (Oakley et al., 2006). Previously reported implementation challenges for working environment interventions include low organizational readiness for change (Weiner et al., 2009), poor intervention fit (Nielsen and Randall, 2015), lack of involvement of employees and line managers (Nielsen, 2013) and contextual factors (Pawson and Tilley, 1997).

The health care sector is a complex and ever changing environment. This variation arises from the continuously evolving requirements due to changes in demographic structures, health care reforms and restructures, new and emerging diseases and disabilities, and changing therapeutic regimes. Workplaces need to be able to recognize and respond to changes and ensure the working environment responds to such contextual changes. Additionally, not only are the work demands prone to change, but the individual resources are also changing over time. Interventions therefore are

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at risk of being irrelevant and inadequate to employee needs over time if they are not responsive to these factors.

Given these ongoing changes in the environment and population needs we propose the "moving target" phenomenon as a further mechanism for the lack of improvement in the working environment. Therefore, to effectively target the working environment, interventions should be flexible and dynamic and highly responsive to the evolving needs of workers and the contextual factors (e.g. the resources of the workplaces and local political agendas).

To design sustainable interventions for such a moving target, focus should therefore be on implementation, which we define as the process of how an innovation is put into use and integrated within the setting (Rabin et al., 2008). This study focuses on the implementation components, that is, the resources and structures that need to be available for working environment interventions to be implemented and to be effective. Moreover, interventions also need to be targeted to the chosen sector (Durlak and Dupre, 2008) and to be cognizant of the norms and values of the stakeholders across organizational structures including workers, managers and policy makers. Thus, given the variability of the settings, to establish the implementation components for effective working environment interventions in nursing assistant care settings, data to inform framework development needs to be derived from within these settings rather than from external published literature or from practices in other sectors.

Different approaches for involving stakeholders and practitioners in intervention development have been suggested (Bartholomew et al., 1998; Batterham et al., 2014; Trochim 1989). One way is the use of intervention mapping that systematically facilitates participation and consultation of all participating stakeholders (Bartholomew et al., 1998). However, intervention mapping focus on a non-moving target (a static outcome) and tends to be driven by theory and therefore may not be suitable for deriving information about implementation components for interventions. A more suitable approach is the concept mapping process. The concept mapping process is a grounded approach using mixed methods for eliciting tacit knowledge (local know how) and organizing current views and practices through generating a mutual understanding and consensus among selected stakeholders (Trochim 1989; Trochim and Linton, 1986).

A framework consisting of implementation components that guide successful implementation is warranted (Moullin et al., 2015).

In the present study our aim was to use concept mapping to comprehensively identify practice-based knowledge about implementation components for sustainable working environment interventions in the nursing assistant sector and then to obtain ratings of importance from stakeholders within the nursing assistant field in order to build an implementation framework suitable for hitting the moving target – the working environment.

2. Methods

The study uses a mixed methods design to engage, consult and synthesize data from a broad range of stakeholders. Specific methods included: 1) forming an industry advisory group, 2) conducting one-on-one interviews, 3) concept mapping workshops, and 4) an e-mail survey.

2.1. Participants

2.1.1. Industry advisory group

An existing industry advisory group was convened to advice on the research related to the working environment of nursing assistants. A total of 18 people represented 14 organizations including the labor market parties, the Danish Working environment Inspection authority, social authorities and secretaries of education. During the study, two meetings were held. The main task for this group was to facilitate selection of interviewees. Moreover the group provided general advice throughout the project, participated in discussions and helped disseminate findings.

2.1.2. Stakeholders for interviews, concept mapping workshops and e-mail survey

The target group for the individual interviews was stakeholders who had active and relevant roles either in the conduct of elderly care or in tracking or improving the working environment among nursing assistants. Each stakeholder from the Industry advisory group was initially invited to participate. Using snowball sampling we asked each stakeholder to identify other stakeholders. Furthermore we included nursing assistants with different roles, working conditions and job descriptions, working hours and type of workplace setting. The final group of stakeholders represented the

Table 1
An overview of the participating stakeholders in one-on-one interview, concept mapping workshop and rating survey divided into categories of organizational types, employment and job titles.

Participants	Interview	Workshops	Importance [a]
Total number (%)	35 (100)	12 (34)	24 (69)
Workplace level			
Nursing assistants	6	0	3
Supervisors, middle management and district management	4	0	2
Working environment consultants	2	0	2
Municipality/regional level			
Planning, coordinating and working environment consultants	4	3	0
Chief/director	1	1	1
Policy (union representative)	1	0	1
National level			
Policy (union, Local Government Denmark and Danish Regions)	5	2	1
Education (Social and Health Care Schools) and development (Branch specific council for the social and health sector)	3	2	1
Governmental organizations (working environment authorities, The National Board of Health and Welfare)	3	0	2
Non-governmental organizations (DaneAge Association, Danish Nurses Association, Leader Association, private consulting firm)	4	2	2
Pension fund (director and health promotion chief)	2	2	0

[a] On a scale from 1 to 5 where 1 was non-essential and 5 indicated highest level of importance. The ratings derived from workshop and e-mail survey.

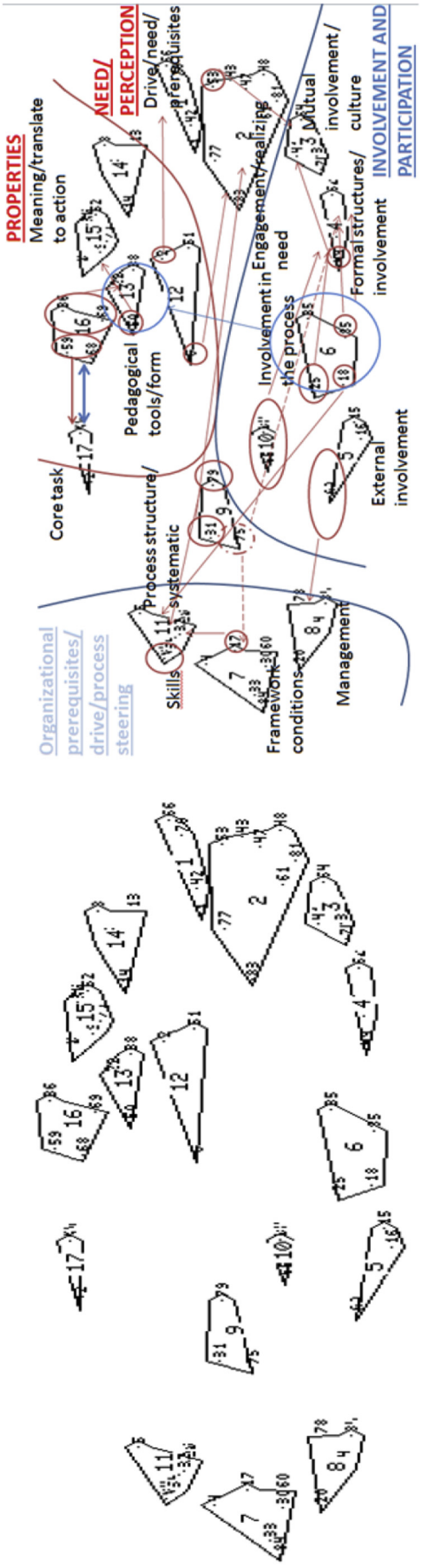

Fig. 1. The concept map before and after the group discussion labeling clusters and identifying overall domains and implementation components (Workshop 2). Small numbers represent the statements (n = 88) and the large numbers represent clusters (n = 17) generated by the Concept Systems software.

nursing industry across Denmark. All 35 consented and participated in the individual interviews and where afterwards also invited to participate in the concept mapping workshop. Participants who could not attend the workshop participated in the e-mail survey.

2.2. Individual stakeholder interviews

Identified stakeholders participated in one-on-one interviews. The interviews were undertaken from June 2014 to January 2015. The interviewer asked the respondent to focus on one specific initiative that he or she had been involved in, which had had a positive effect on the working environment of nursing assistants. The stakeholder was asked to reflect on whom or what initiated the process and other involved persons, what resources had been available during the initiative, whether a needs assessment had been undertaken, what started the initiative, relevant circumstances that may have influenced the initiative, documentation of the effects, and how they had evaluated effects in the working environment as a result of the initiative. After these reflections the seeding statement was posed. The seeding statement constitutes an important question that focuses the concept mapping procedure. For this study the seeding statement was: "*List the three most important factors for an initiative to be effective for improving the working environment among nursing assistants?*". The presentation of the seeding statement following the reflections sought to assist respondents to bind their answers to their actual experiences.

Interviews were transcribed and responses to the seeding statement were collated and duplicates removed in preparation for use in concept mapping workshops.

2.3. Concept mapping workshops

The main approach for engaging stakeholders was concept mapping (Trochim 1989; Trochim and Linton, 1986). We invited 35 stakeholders to participate in one of two workshops, each lasting about 3.5 h. The method is described in detail elsewhere (Busija et al., 2013). In short it involves five steps: 1) stakeholder driven brainstorming on a chosen theme, 2) statement analysis and synthesis, 3) unstructured sorting of stakeholder generated statements, 3) rating of statements, 4) multidimensional scaling and cluster analysis using specialized software (ConceptSystems) (Trochim et al., 1994; Trochim and Linton, 1986) and 5) generation and interpretation of one final concept map. In the last step revision of the concept map by stakeholders included labeling each cluster, and identifying sub- or super-clusters. In this study, step 1 was derived from individual interviews making it possible to include each stakeholder's experiences and to include all stakeholders' inputs within the group process. Step 2 to 5 were conducted during the concept mapping workshops.

The interviews focused first very broadly on all possible components the stakeholder could think of when implementing a working environment initiative, and in the end of the interview they were asked to narrow the brainstorm list down to three central factors for initiative effectiveness on the working environment via the seeding statement *"List the three most important factors for an initiative to be effective for improving the working environment among nursing assistants?"*. The brainstorming process was undertaken with individuals rather than in a group setting to maximize breadth of input, especially from staff and managers who may be unable to or reluctant to attend the workshop. Importantly, we sought national representation, and project resources did not permit bringing representatives from across the country to the research facility. We also sought deep reflection of implementation knowledge, therefore we conducted in depth interviews with

probing questions.

In the two workshops every statement derived from the interviews were then rated as follows; "*How important is the content in each statement for an initiative to be effective on the working environment among the nursing assistant target group?*". This rating was done by stakeholders individually. The rating scale ranged from 1 to 5, where 1 was non-essential and 5 indicated highest level of importance.

2.4. E-mail survey

The stakeholders who were unable to attend the workshop and one stakeholder who we didn't reach to do the rating during the workshop (n = 24), but had been interviewed, also rated the statement above in the same manner.

2.5. Framework development

After the two workshops, the two maps were merged, including stakeholder ratings in the concept mapping system, and email survey, to derive a final map. The ratings from the e-mail survey were also included in this step, which were made by HHJ and MBJ. The framework was derived from the final map and discussed and endorsed by the stakeholder group in a face to face meeting.

3. Results

3.1. Stakeholder participation

The final group of stakeholders is presented in Table 1 and included 35 representatives including those from the workplace level (nursing assistants, supervisors, middle management representatives and district management), representatives from the municipality/regional level (working environment consultants, politicians and director/chief level) and representatives from a national level (policy makers (union, Local Government Denmark and Danish Regions), stakeholders in the field of education (Social and Health Care schools and post graduate schools) and development (Branch Specific Council for Social and Health care Sector), governmental and non-governmental organizations, both with a direct or indirect focus on the working environment among nursing assistants, and a pension fund. All stakeholders were interviewed and contributed equally to the statement generation. Of 35 invited, 12 stakeholders participated in one of two workshops. In the e-mail-based survey, rating data were collected among a further 15 of the 24 stakeholders.

3.2. Mapping analysis and stakeholder views

A total of 104 statements were derived from the interviews and were reduced to 85 once duplicates were removed. Fig. 1 shows a map before and after the group discussion where clusters were labeled and followed by conceptualization of four main domains; "Organizational Components/Drive/Process Steering", "Involvement and Participation", "Need/Perception" and "Properties" and 13 components. For the other workshop similar domains and components were derived.

3.3. Final map including importance ratings

A final map was developed by merging the maps and labels from the two workshops. The names of the components were based on

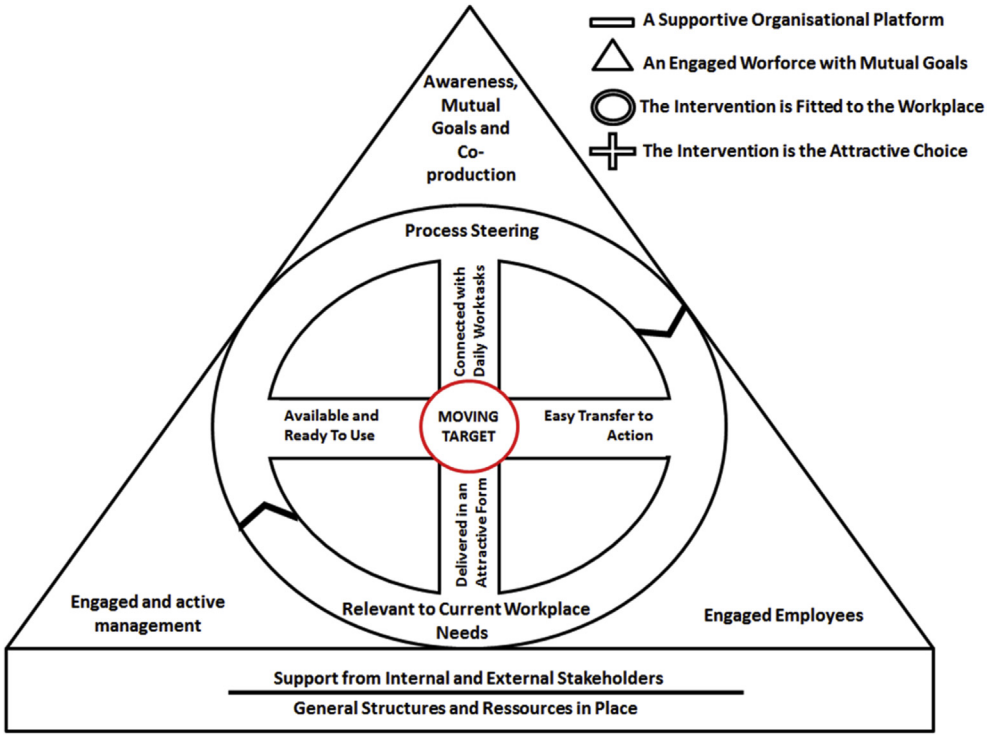

Fig. 2. Hitting the Moving Target Framework. The framework consists of 11 practice-based implementation components that are hypothesized to be essential for becoming successful in targeting the continuously evolving nature of the working environment in the nursing assistant sector (the moving target). The 11 practice-based implementation components are clustered into four overall domains; 1) a supportive organizational platform, 2) an engaged workplace with mutual goals, 3) the intervention is fitted to the workplace and 4) the intervention is the attractive choice. The framework should be seen as non-hierarchical, meaning that workplaces should consider which components they master already and which they should improve and not work on all domains or implementation components in a specific order or all at a time.

the discussions from the stakeholders. A total of 11 final practice-based implementation components were generated: “Engaged and Active Management”, “Available and Ready to Use”, “Connected with Daily Work Tasks”, “General Structures and Resources in Place”, “Process Steering”, “Relevant to Current Workplace Needs”, “Engaged Employees”, “Easy Transfer to Action”, “Awareness, Mutual Goals and Co-production”, “Support from Internal and External Stakeholders”, “Delivered in an Attractive Form”. The 11 practice-based implementation components were clustered and discussed at a meeting with 12 of the stakeholders. Their main ideas were that the implementation components called for a non-hierarchical framework meaning that workplaces could consider which components they master already and which they could improve and not work on all domains or implementation components in a specific order or all at a time. This final discussion resulted in clustering the implementation components in four overall domains: 1) A supportive organizational platform, 2) An engaged workplace with mutual goals, 3) The intervention is fitted to the workplace and 4) The intervention is the attractive choice. The four overall domains and their 11 underlying practice-based implementation components are illustrated in Fig. 2 in the framework which is called Hitting the Moving Target.

The stakeholder participation rate was 24/35 - 12 in the workshops and 15 by e-mail, in total 3 invalid answers for completing the additional rating of importance of each statement was 69% (Table 1). The mean rating on importance was calculated for each practice-based implementation component. Table 2 shows the order in mean rating values for each implementation component, with a range from 2.8 to 4.1 (scale range: 1 to 5), where “Engaged and Active Management” (4.1), “Available and Ready to Use” (3.9) and “Connected with Daily Work Tasks” (3.8) were the three highest rated implementation components. The lowest rated implementation component was “Delivered in an Attractive Form” (2.8).

4. Discussion

This study has derived a practice-based framework for the development, introduction and implementation of working environment initiatives such that they become embedded and sustainable in daily practice at the workplace. The elements of the framework, grounded in the daily practice of key stakeholders, identify implementation components for interventions to be selected for, derived from, and applied in the working environment. Thus the 11 practice-based implementation components provide insight into the key stakeholders' norms and values with respect to successful implementation of sustainable interventions. The setting in which we generated the framework was in nursing homes with nursing assistants – an evolving environment with challenging working conditions that result in a wide range of complex and chronic health problems (Holtermann et al., 2010).

We organized the practice-based implementation components into a framework of four overall domains based on the input from the stakeholders participating in the workshop (Fig. 2). This new framework focuses on how workplaces can implement sustainable working environment interventions, which previous attempts haven't been successful in (Aust et al., 2010). The framework itself is not the solution for poor or ineffective working environment practices, but is designed to be a new and active approach to facilitating work environment improvement, and hopefully, mitigate frequent implementation failure that is often observed (Aust et al., 2010; Nielsen et al., 2006). The framework extends previous models or frameworks to guide workplace health intervention development (Burton, 2010), as it adds new practice based processes to existing implementation strategies.

Many previous implementation models are built on the iterative cyclical model of continual improvement suggested by Deming in the 1950s (Burton, 2010). The four processes in that model are to PLAN the intervention, DO the intervention, CHECK the intervention and ACT on the experiences (PDCA). Recently the World Health Organization (WHO) considered a number of such models and also suggested their own system for continual improvement in working environment with eight steps: Mobilize, Assemble, Assess, Prioritize, Plan, Do, Evaluate, Improve (Burton, 2010). In addition, they concluded that management support and employee involvement were key elements for successful implementation. We believe that our framework's domains *An engaged workforce with mutual goals* and *The intervention is sustainably fitted to the workplace* cover the aspects of the cyclical models, however not in a cyclical manner. Since the components within the domains are connected with dependencies, continuous cycling using a PDCA may not be as efficient for generating sustainable change as taking a more tailored approach. Instead, workplaces should consider which components they address already and which they should improve. For example, a workplace may have good co-production between employees and management, and between teams, but they may not have the necessary expertise in process steering or the right tools for a good needs assessment. With our model, we take a whole-of-organization approach, suggesting that the workplace should strengthen their capability in these areas rather than cycling through planning, doing, checking and acting continuously.

Apart from our two domains *An engaged workforce with mutual goals* and *The intervention is sustainably fitted to the workplace*, most of the cyclical models do not consider our framework's other two domains. For example, our framework suggests that support from internal and external stakeholders is important for an intervention to be successful. The framework shows that the organization needs to have structures and resources available to make it happen, which is captured in the domain *A supportive organizational platform*. Previously, researchers have addressed organizational readiness to change (ORC) (Weiner, 2009), which to a large degree is captured in the domain *A supportive organizational platform* of our framework. Weiner et al. (2009) state multiple determinants and outcomes of ORC, where organizational resources and organizational structure are two of five possible contextual factors that are determinants of ORC (Weiner, 2009).

Finally, an important element in our framework that isn't considered in the cyclical models, nor in the models considering organizational readiness, is the domain *The intervention is the attractive choice*. This domain covers some generic characteristics or qualifications of the intervention that the stakeholders of the health care setting consider important for an intervention to be adopted and used. While characteristics of innovations or initiatives are addressed as important measures in some process evaluation and implementation guidelines (Damschroder et al., 2009; Greenhalgh et al., 2004; Grol and Wensing, 2004), they have seldom been as explicitly stated as in our framework. Some of the characteristics resemble ideas also mirrored in previously proposed theory, for example within Kaizen groups, where the interventions' connectedness to core work tasks is often considered as the interventions' contribution to production is in focus (Singh and Singh, 2009). Furthermore, the implementation components covering that the intervention should be available and ready to use and delivered in an attractive form mirror to some degree the ideas from Nudge theory (Sunstein and Thaler 2008), which addresses the importance of making the healthy choices so easy, that they become peoples' choices unconsciously (Sunstein and Thaler 2008). Finally, Damschroder et al. (2009) (Damschroder et al., 2009) have built a comprehensive overview of implementation components to consider in their framework “Consolidated framework of

Table 2
The final 11 practice-based implementation components, underlying stakeholder statements for each implementation component, and mean rating scores for the level of importance of each individual statement (on a 1–5 scale, where 1 is the lowest importance level and 5 is highest the degree of importance).

Implementation components (Mean scores for rating on importance)			
	Mean		**Mean**
Engaged and Active Management	**4.1**	**Available and Ready to Use**	**3.9**
The management takes responsibility	4.4	It is useful	4.4
The management is involved	4.4	It is meaningful	4.3
The management is active	4.3	It is accessible	3.8
The management is supportive	4.3	It is specific	3.8
It has the management's attention	4.2	There are simple and practical tools	3.8
The management is well-prepared	4.0	It has relevant content	3.8
The management is courageous	3.8	It is simple	3.5
There is positive feedback	3.6		
Connected with Daily Work Tasks	**3.8**	**General Structures and Resources in Place**	**3.6**
It is practice related	4.2	There is involvement of the right people	4.2
It is integrated into daily tasks at the workplace	4.1	There are economic resources	4.2
The starting point is the everyday and known issues	4.1	Time is allocated	4.0
There is a focus on the core task	4.0	The process is clear	3.9
It is based on the care of the residents	3.7	There is a structured process	3.3
Culture is an incorporated factor	3.3	There is a structured project description	3.1
There is a high professional level	3.0	Consultants are available	2.5
Process Steering	**3.5**	**Relevant to Current Workplace Needs**	**3.5**
There is organizational perseverance	4.4	It is relevant	4.3
There is an on-going surveillance	3.8	It is needed	4.2
There is cooperation around the initiative	3.7	There is need among the employees	3.8
There is a set of criteria to secure that aims are fulfilled	3.6	The problems are made visible	3.7
There is an on-going follow-up	3.6	It is well-timed	3.5
There are precise objectives	3.5	It should also be in favor of the residents	3.4
The change is visible throughout the organization	3.2	It can be adjusted to individual needs	3.3
There is an on-going re-launch of actions	3.2	The importance is obvious to the relatives of the residents	2.6
There is a long well-planned process	2.5	It is "here and now"	2.6
Engaged Employees	**3.5**	**Easy Transfer to Action**	**3.4**
You feel ownership	4.0	The content is not only theoretical	3.9
The employees are being heard	3.9	It must be easy to maintain	3.8
The employees have influence	3.7	The content is easy to communicate	3.6
The employees are involved in the processes	3.7	There is not many demands	2.8
Everyone knows they are a part of the solution	3.6	It is intuitive	2.7
It should also be in favor of the colleagues	3.5		
Truly dedicated people are involved	3.3		
Everybody is involved	3.3		
It is a joint action	3.1		
Several professional groups are involved	3.0		
The participants set the goals	3.0		
Awareness, Mutual Goals and Co-production	**3.3**	**Support from Internal and External Stakeholders**	**3.0**
You must have faith in it	3.9	The (local) working environment representative takes the task seriously	3.7
There is a great deal of support to the initiative	3.4	There is information from representatives from management, employee and the local working environment system[a]	3.3
You have to be passionate about it	3.3	Representatives from management, employee and the local working environment system supports it and is frontrunners[a]	3.2
There is a pioneer	3.3	There is involvement of the occupational safety-and health system	3.2
People are made aware	3.3	There is a strong political commitment	3.0
There is a good atmosphere among colleagues	3.1	There is co-operation with the union	2.7
There is a focus on the workplace community	3.0	There is a political pressure behind it	2.6
There is no resistance	2.9	It involves the union	2.5
Delivered in an Attractive Form	**2.8**		
It is something that we mutually agree on	3.3		
It supports a good dialogue	3.3		
Key persons are educated	2.7		
Everybody receive the same education	2.6		
It has a funny and different form	2.4		
It has an innovative content	2.3		

[a] In Denmark, all workplaces are obliged to have a committee at the workplace consisting of representatives from management, employee and the local working environment system.

implementation research (CFIR)". The CFIR addresses some of the innovation explicitly. For example, a construct in the CFIR considers the compatibility of the innovation – that is how it is fitted to and accepted by the end-users. Another construct, "access to information and knowledge", considers the ease of access to digestible information and knowledge regarding the innovation. The comprehensive CFIR is suitable for researchers and implementation professionals to work systematically with implementation of large scale health services and research. However, our framework, tailored and closely practice-based, reduces the need for translation in to practice and is developed to be acceptable in a wide range of usual organizational settings, compatible with everyday routines. Thus our framework couples aspects of innovation with other more organizational implementation issues and may inform both stakeholders and researchers in a new and more practical way to improve implementation of sustainable work environment systems.

The strengths of the framework is that it is grounded in daily experiences of a wide range of stakeholders, and includes their insights in to what has worked for them, under what circumstances and why in their particular setting. The stakeholders derived ideas from real innovations and from their practice-based reflections on implementation components that made them successful. Importantly, the framework is based on key user and stakeholder experiences rather than expert opinions or previous literature this allowed innovation to emerge. The framework is sector-specific. That means that stakeholders had a mutual goal in mind within similar organizations with similar working environment issues. This allowed us to go into great depth and derive a very comprehensive range of practice-based reflections. While generic models build consistency and can widely be adopted they may not have all the elements required for all sectors. Using the concept mapping and a grounded interview approach, stakeholders from one sector generated nuanced implementation components that may well be absent in generic frameworks. While Hitting the Moving Target Framework was generated in the nursing assistant sector, it clearly covers elements of other generic improvement approaches, and it may well be applicable to other sectors than the nursing assistants sector.

4.1. Methodological implications

A potential limitation of this study is the modest participation rate in the concept mapping workshops. However, the statements used in the concept mapping workshops were collected among 35 stakeholders representing both workplaces, regional and national level and including a variety of functions. Therefore the data generated for the concept mapping workshop are likely to be reasonably representative. We did not follow Tochim's concept mapping protocol strictly as the brainstorm process was replaced with interviews. While this reduces the opportunity for participants to build their inputs on the discussion of others, it does reduce potential bias related to dominant participant(s) effect which can occur in group settings, especially in the workplace setting where strong a hierarchy can exit (i.e., junior, senior and managerial staff). The in depth interviews generated rich reflective data from a broader group, which may have strengthened in puts into the concept mapping process. It should be noted that this study was conducted in Denmark, a country with a highly democratic and systematic approach to addressing labour market and work environment issues. Most regulations are based on agreements between the labour market parties, representing the workers, the employers and the government. Thus implementation components such as "support from internal and external stakeholders" may be particularly important in a Danish context.

5. Conclusion

This study offers new and relevant practice-based knowledge regarding norms and values and general understandings about implementation of initiatives that improves the working environment. Furthermore, it illustrates a promising model for active co-production between researchers, practitioners and managers to accelerate the translation of research into practice (Bumbarger BK, 2012; Carpenter et al., 2012). Further work is required to translate the results for this study into practical tools for workplaces and then disseminated.

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References

Andersen, L.L., Clausen, T., Burr, H., Holtermann, A., 2012. Threshold of musculoskeletal pain intensity for increased risk of long-term sickness absence among female healthcare workers in eldercare. PLoS One 7 (7), e41287.

Aust, B., Rugulies, R., Finken, A., Jensen, C., 2010. When workplace interventions lead to negative effects: learning from failures. Scand. J. public health 38, 106–119.

Bartholomew, L.K., Parcel, G.S., Kok, G., 1998. Intervention mapping: a process for developing theory and evidence-based health education programs. Health Educ. Behav. 25, 545–563.

Batterham, R.W., Buchbinder, R., Beauchamp, A., Dodson, S., Elsworth, G.R., Osborne, R.H., 2014. The optimising health literacy (ophelia) process: study protocol for using health literacy profiling and community engagement to create and implement health reform. Bmc public health 14, 694.

Bumbarger BK, C.E.M., 2012. A state agency–university partnership for translational research and the dissemination of evidence-based prevention and intervention. Adm. Policy Ment. Health and Mental Health Serv. Res. 39, 268–277.

Burton, J., 2010. Who Healthy Workplace Framework and Model: Background and Supporting Literature and Practice.

Busija, L., Buchbinder, R., Osborne, R.H., 2013. A grounded patient-centered approach generated the personal and societal burden of osteoarthritis model. J. Clin. Epidemiol. 66, 994–1005.

Carpenter, W.R., Meyer, A.-M., Wu, Y., Qaqish, B., Sanoff, H.K., Goldberg, R.M., Weiner, B.J., 2012 Aug. Translating research into practice: the role of provider based research networks in the diffusion of an evidence-based colon cancer treatment innovation. Med. Care 50 (8), 737–748.

Damschroder, L.J., Aron, D.C., Keith, R.E., Kirsh, S.R., Alexander, J.A., Lowery, J.C., 2009. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement. Sci. 4, 50.

Durlak, J.A., Dupre, E.P., 2008. Implementation matters: a review of research on the influence of implementation on program outcomes and the factors affecting implementation. Am. J. community Psychol. 41, 327–350.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., 2004. Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Q. 82, 581–629.

Grol, R., Wensing, M., 2004. What drives change? Barriers to and incentives for achieving evidence-based practice. Med. J. Aust. 180, S57–s60.

Holtermann, A., Jørgensen, M.B., Gram, B., Christensen, J.R., Faber, A., Overgaard, K., Ektor-andersen, J., Mortensen, O.S., Sjøgaard, G., Søgaard, K., 2010. Worksite interventions for preventing physical deterioration among employees in job-groups with high physical work demands: background. Design and conceptual model of finale. BMC Public Health 10, 120.

Moullin, J.C., Sabater-hernández, D., Fernandez-llimos, F., Benrimoj, S.I., 2015. A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework. Health Res. policy Syst.

13, 16.
Nielsen, K., Fredslund, H., Christensen, K.B., Albertsen, K., 2006. Success or failure? Interpreting and understanding the impact of interventions in four similar worksites. Work Stress 20, 272–287.
Nielsen, K., 2013. Review article: how can we make organizational interventions work? Employees and line managers as actively crafting interventions. Hum. Relat. 66, 1029–1050.
Nielsen, K., Randall, R., 2015. Assessing and addressing the fit of planned interventions to the organizational context. Derailed Organ. Interventions Stress Well-Being Springer 107–113.
Oakley, A., Strange, V., Bonell, C., Allen, E., Stephenson, J., Ripple Study Team, 2006. Health services research: process evaluation in randomised controlled trials of complex interventions. BMJ. Br. Med. J. 332, 413.
Pawson, R., Tilley, N., 1997. Realistic Evaluation. Sage.
Rabin, B.A., Brownson, R.C., Haire-joshu, D., Kreuter, M.W., Weaver, N.L., 2008. A glossary for dissemination and implementation research in health. J. public health Manag. Pract. 14, 117–123.
Singh, J., Singh, H., 2009. Kaizen philosophy: a review of literature. IUP J. operations Manag. 8, 51.
Sunstein, C.R., Thaler, R.H., 2008. Nudge - improving decisions about health. Wealth and happiness.
Trochim, W.M., 1989. An introduction to concept mapping for planning and evaluation. Eval. Program Plan. 12, 1–16.
Trochim, W.M., Cook, J.A., Setze, R.J., 1994. Using concept mapping to develop a conceptual framework of staff's views of a supported employment program for individuals with severe mental illness. J. Consult. Clin. Psychol. 62, 766.
Trochim, W.M., Linton, R., 1986. Conceptualization for planning and evaluation. Eval. Program Plan. 9, 289–308.
Weiner, B.J., 2009. A theory of organizational readiness for change. Implement. Sci. 4.
Weiner, B.J., Lewis, M.A., Linnan, L.A., 2009. Using organization theory to understand the determinants of effective implementation of worksite health promotion programs. Health Educ. Res. 24, 292–305.