

Chapter 8

Barriers and facilitators to implementation of an occupational health guideline aimed at preventing weight gain among employees in the Netherlands



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Abstract

Objective To assess barriers and facilitators to implementation of an occupational health guideline aimed at preventing weight gain.

Methods Barriers and facilitators to implementation were assessed among 14 OPs and employers, and analyzed following a systematic approach using Atlas-ti.

Results Barriers and facilitators mentioned by OPs and employers were related to the socio-political context, the organization, the OP, and the guideline. Recommendations include the formation of a linkage group, collaboration with other experts, formation of peer support groups, and communicating benefits of investments, expectations and ethical considerations. It is recommended to incorporate these barriers and facilitators in the guideline, including strategies how to overcome barriers and stimulate facilitators.

Conclusions The identified barriers and facilitators can be used to increase the chance of successful implementation of the final guideline into occupational health practices throughout the Netherlands.

Introduction

In the Netherlands, over 2,000 occupational physicians (OPs) assist employers and employees in occupational health issues, safety, and sickness absence management by providing occupational health care to the working population. Since 1998, the Netherlands Society of Occupational Medicine develops and implements evidence-based practice guidelines for OPs. Practice guidelines are documents with recommendations to assist OPs with decisions about appropriate health care for specific clinical circumstances [1]. While the majority of the guidelines focus on sickness absence management, a shift is now seen towards prevention [2-4].

Currently, overweight and obesity are major health problems, also in the field of occupational health [5]. Overweight, but especially obesity, is associated with higher sickness absence rates and lower productivity levels [6] [7], and both are important contributors to several chronic disorders such as cardiovascular diseases and diabetes mellitus type 2 [8,9]. To address the increasing prevalence of overweight and obesity, and the associated burden of disease and financial burden, an occupational health guideline was developed aimed at preventing weight gain among employees [10]. The effectiveness of the occupational health guideline was compared to usual care in a randomized controlled trial on body composition and energy balance-related behaviors of employees [11].

Moreover, a process evaluation was conducted alongside the trial to explain how the intervention was administered, in order to clarify if flaws were due to the content or performance of the guideline [12].

Nevertheless, as the effect and process evaluation concerned the guideline, and as health services research consistently shows a gap between evidence-based practice and actual clinical care [13], more information is needed on other factors that can affect the innovation process, such as financial resources, resistance among users and complexity of the innovation, as a result of which the actual implementation may not or only partly occur [14]. To bridge this gap, in-depth understanding of barriers and facilitators to implementation is important, as implementation strategies are logically aimed at the most relevant factors [15]. Based on interviews with OPs and employers, the aim of this study was to 1) identify barriers and facilitators to implementation of the draft guideline and 2) provide recommendations for future implementation of the final guideline into occupational health care in the Netherlands.

Methods

This study was carried out as part of the Balance@Work project. The study protocol was approved by the Ethics Committee of the VU University Medical Center and all participants gave informed consent. Details of the study design have been published elsewhere [10]. Relevant aspects of the qualitative design of this study are reported following the COnsolidated criteria for REporting Qualitative research (COREQ) [16].

Study setting and intervention

The Balance@Work study was designed as a randomized controlled trial to investigate the effectiveness of the weight gain prevention guideline. The draft guideline was developed in 2008 from literature, interviews with relevant stakeholders, and consensus among a guideline working group, consisting of practitioners and experts [10]. In 2009, 28 OPs providing services to one or more companies of medium or large size (>100 workers) were recruited by the Netherlands Society of Occupational Medicine to participate in the evaluation of the guideline. To avoid contamination between employees allocated to the intervention or control condition, randomisation was performed at the OP level by an independent researcher using Random Allocation Software (version 1.0, Isfahan University of Medical Sciences, Iran). Between randomization and the baseline measurement, twelve OPs withdrew due to a lack of time, their company withdrew, or their company cancelled the project because of the economic crisis. Therefore the Balance@Work project started with seven intervention OPs and nine control OPs. These OPs were able to recruit 523 employees, who had unhealthy levels of daily physical activity or dietary behavior (i.e. did not comply to public health physical activity and nutrition recommendations [17-19]) and/or were overweight (i.e. waist circumference >80 cm for women and >94 cm for men). During the 6-months intervention period none of the OPs, but 35 employees, were lost-to-follow-up [11].

OPs in the control group were asked to provide care as usual, which generally consisted of a health risk appraisal with anthropometric measurements, and a subsequent health advice. OPs in the intervention group were asked to provide guideline-based care. The guideline consisted of three sections: a) prevention at the environmental level (advice for the employer) described how to assess and intervene on the obesogenic work environment; b) prevention at the individual level (advice for the employee) described how OPs can promote physical activity and healthy dietary behavior of employees, during five counseling sessions based on principles of motivational interviewing; and c) evaluation and maintenance of previously mentioned sections. With regard to prevention at the environmental level, an environment scan was developed for OPs to discuss with employers, at baseline and at 6-months follow-up. The environment scan addressed the obesogenic environment (e.g. an environment that promotes unhealthy food choices and discourages physical activity [20]). Because it is difficult to maintain weight loss in an unsupportive environment, the environment scan consisted of an overview of environmental risk factors extracted from literature, that could contribute to preventing weight gain (for example: availability of bike sheds and shower facilities, pricing strategies in cafeteria). Based on this overview, environmental goals could be prioritized, and feasibility and barriers for implementation could be discussed with the employer and the workers' representative council. With regard to prevention at the individual level, a minimal intervention strategy was developed for OPs on how to promote employees' healthy lifestyle in five 20-30 minute counseling sessions during 6 months. For this purpose, OPs were trained during two days in applying behavioral change counseling, an adapted form of motivational interviewing suitable for brief consultations in healthcare settings [21]. During the first counseling session, after having discussed their risk profile

and current health status, employees could choose which target behavior they would like to discuss (increasing physical activity, decreasing sedentary behavior, increasing fruit consumption, or reducing the energy intake derived from snacks). Next, ambivalence and motivation for change was assessed by discussing pros and cons of behavior change, and willingness, importance, and perceived confidence to change behavior. OPs then moved employees towards a decisional balance and increased perceived behavioral control by asking employees to formulate maximally three implementation intentions. Last, employees set short- and long-term goals. In subsequent sessions, progress and barriers were discussed and short-term goals could be adjusted. No specific weight loss advice was provided, as the guideline aimed to prevent weight gain by improving employees' physical activity and healthy dietary behavior. To monitor their behavior, employees were provided with a toolkit containing a waist circumference measuring tape, a pedometer, a diary, and leaflets on physical activity and nutrition from the Dutch Heart Foundation and the Netherlands Nutrition Centre. In order to effectively achieve behavioral change in practice, all of the above mentioned strategies were selected from theory- and evidence-based practice [10]. Moreover, stakeholders were involved in every step of the development and evaluation process (e.g. practice-based evidence) [15,22].

To assess what happened during the intervention and how that affected program impact, several important process parameters were evaluated among intervention OPs and employees (e.g. recruitment, reach, context, dose delivered, dose received, satisfaction, fidelity and the link between process items and outcome measures) [12]. Despite this abundant data, little was known about facilitating and impeding factors to implementation among OPs that had worked according to the draft guideline.

Data collection

To measure the degree of implementation, interviews were conducted after the intervention period among all OPs (n=7) and employers (n=7) allocated to the intervention group.

Theoretical framework

Barriers and facilitators are defined as factors that impede or facilitate behavioral change [23]. Various theories and models for change show a multitude of factors that influence implementation of clinical guidelines [24-26]. These frameworks however, mainly focus on the individual professional. The framework developed by Fleuren et al. (2004) [14] focuses on factors related to health care organizations (Figure 1). The general outline of this framework was derived from the Theory of Planned Behavior [27], Social Cognitive Theory [28] and from previous research on innovation in AIDS education in Dutch schools [29]. The framework describes that in each stage of an innovation process (e.g. dissemination, adoption, implementation, and continuation) the desired change may or may not occur due to various barriers and facilitators. Based on literature review and a Delphi study among implementation experts, Fleuren et al. (2004) identified 49 factors that may impede or facilitate implementation. These were classified into five implementation levels: characteristics of the social-political context (e.g. laws, policy, regulations and social

networks), the organization (e.g. management support and resources), the user (e.g. knowledge and skills of the OP), the innovation (e.g. observability, ethical considerations and advantages in practice of the guideline), and characteristics of the innovation strategy (e.g. training, materials, and feedback). We used this framework to structure barriers and facilitators perceived by OPs and employers. Because the phases dissemination and adoption already occurred when OPs and employers consented to participate in the Balance@Work project, the focus of the present study is on factors concerning the phases implementation and continuation. Moreover, as the characteristics and effectiveness of the innovation strategy are described in the process evaluation, this study focuses on the first four implementation levels described by Fleuren et al. (2004).

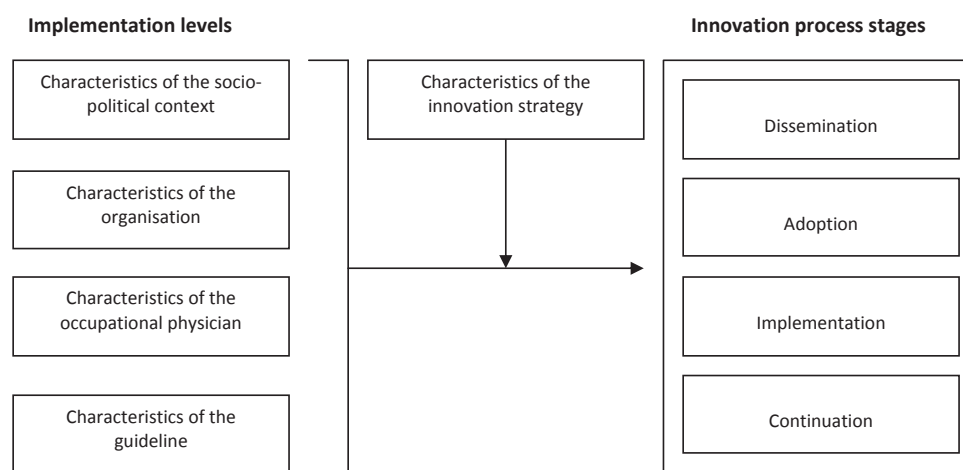


Figure 1. Implementation levels and stages of the innovation processes (copy of original with permission from Fleuren et al. 2004 [14]).

Semi-structured interviews

A semi-structured interview guide was used to assess barriers and facilitators related to implementation of the guideline. OPs and employers were asked four primary questions, which included: 1. what was new for you when working according to this guideline?; 2. what made that you started working differently (e.g. according to the guideline)?; 3. what would you advice colleagues (e.g. do's and don'ts)? and 4. why would you (not) continue to use the guideline? Subsequently, specific questions were introduced if participants did not mention these topics, such as; why were your expectations (not) met?; which specific sections of the guideline did you (not) perform?; and what are your recommendations for future implementation of the guideline?

The semi-structured interviews were held after the 18-months trial period, between September 2010 and January 2011. One focus group interview among three OPs was conducted at the Netherlands Society of Occupational Medicine during one hour. The interview was conducted by an independent, experienced OP (AN) with a degree in

psychology. The principal researcher (LV) took notes and asked clarifying questions. Because a second focus group interview could not be organized, the principle researcher interviewed the remaining four OPs in pairs by phone during one hour, following the same interview guide. Employers were interviewed individually by phone by the principle researcher during 15 minutes. All interviews were digitally recorded and participants signed informed consent.

Data analyses

The interviews were transcribed by two authors (LV and EL). Possible barriers and facilitators were extracted from the transcripts by coding relevant passages of text, and analyzed following a systematic approach using the qualitative software program Atlas.ti (version 5.2) [30]. Following the constant comparison process, every selected passage was compared to the rest of the text in order to identify all nuances in the data [31]. The identified factors were then clustered to reduce and refine key factors according to the different implementation levels [14]. Based on the key factors, further analyses were performed to detect and check correspondence and differences between factors. In order to ensure uniform coding, the identified barriers and facilitators were discussed in a consensus meeting until agreement was reached [31]. Transcripts were not returned to participants for comments. For the selected barriers and facilitators, relevant quotations were derived from the text to illustrate the meaning that participants attached to the factors. Quotations were translated from Dutch to English by the principal researcher (LV), and checked by a second research team member (EL).

Results

Participant characteristics

OPs were on average 47 years old (range 35-54 years), and two of the seven OPs were men. On average, OPs had 14 years of experience (range 7-21 years) as an OP. Four were employed at an external occupational health service (OHS), two at an internal OHS and one OP was self-employed. Employers were all human resource managers, of whom three were men. All worked for large size companies (>300 employees), including a university, a bank, a nursing home, a spice factory, a packaging company, a municipality, and a consumer goods company. The recruited employees were white-collar workers (70%), blue-collar workers (15%), or had client contact (15%).

Implementation factors

Table 1 presents the identified barriers and facilitators to implementation of the guideline, as explained by OPs and employers. Factors were often perceived as both a facilitator and barrier to implementation, namely when a factor was or was not met, respectively. Employers mostly mentioned factors that addressed the socio-political context and the organization, while OPs generally addressed their own role and the guideline.

Table 1. Perceived barriers and facilitators to implementation of the guideline, explained by OPs and employers.

| Implementation level | Factor | Barriers (B) and facilitators (F), mentioned by | |
|-------------------------|---|---|-----------|
| | | Occupational Physicians | Employers |
| Socio-political context | Compatibility with societal developments | | F |
| Organization | Management support | B | F |
| | Benefits of investments | B & F | B & F |
| | Compatibility with policy and culture | F | B & F |
| | Resources | B & F | B & F |
| Occupational physician | Personal determinants: knowledge and skills | B & F | B & F |
| | Support from colleagues | B | |
| | Compatibility with current practice | B & F | |
| Guideline | Relative advantage | F | F |
| | Observability | B & F | |
| | Expectations | B & F | B & F |
| | Ethical considerations | B & F | B & F |

Socio-political context

Regarding the socio-political context, one factor was mentioned by employers.

Compatibility with societal developments

Implementation was facilitated according to some employers because the guideline was compatible with current societal developments. One employer explained his company's increased attention for prevention as follows: 'That also has to do, if I broaden it, with societal developments. There is more attention for it, and more attention is asked for it. So at some point that also penetrates an organization such as ours.'

Organization

At the organizational level, four factors were mentioned by OPs and employers. These were management support, benefits of investment, compatibility with policy and culture, and financial and material resources.

Management support

During the interviews, most employers mentioned that they supported implementation of the guideline. One employer simply illustrated: 'We are enthusiastic about this [the guideline].' However, most OPs perceived management support as a barrier to implementation, because OPs felt management was not prepared to actively assist them. For example, one OP said: 'I did not really find the employer to be very motivated. They fill it [the environment scan] in rather quickly during lunch, but if there was really attention for it, or that they promised improvement, well, no.'

Benefits of investment

The factor benefits of investment refers to statements on perceived benefits. Both OPs and employers mentioned that perceived benefits may work as a facilitator to implementation, as illustrated by an OP who stated: 'It is not just weight loss, but employee satisfaction that we can benefit from.' Nevertheless, one employer explained that the lack of clear benefits may also work as a barrier to implementation: 'It is especially important (...) that you can show what is gained, is it worth the investment (...). But if it is proposed as do something new, and you have to invest, but we cannot really show what the benefits are, then it will be very difficult.'

Compatibility with policy and culture

Although most employers stated that they did not know whether the guideline contributed to their health policy, some employers found compatibility of the guideline with their policy and culture to work facilitating. One employer illustrated: 'I think that this is a theme that relates to what our organization stands for, and to what we already do.' OPs agreed that implementation was facilitated when this factor was met, but highlighted that this factor could also be a barrier to implementation when it was not met: 'With these kind of topics (physical activity, nutrition) it should not only be part of the behavior of OPs, but it should be part of the behavior of the company.'

Resources

Employers all stated that financial resources were not a barrier to implementation, as illustrated by one employer who said: 'It concerns people's health, so in that sense it [money] is not a problem.' Among OPs however, resources that were perceived as barriers were the OPs job position (self-employed, internal position or external position via occupational health services), agreements in contracts, and time issues. Regarding job position, a self-employed OP stated to have the advantage of managing his own time. An OP from an internal OHS stated to be able to schedule appointments more easily. On the other hand, an OP who worked via an external OHS stated: 'I usually don't find it [weight gain prevention] to fit within the contract that we have with a client. (...) You don't get extra time for it, so it was at the expense of other things I did.' Subsequently, all OPs mentioned that agreements in contracts are a crucial factor to consider for implementation. A self-employed OP found his contract based on hours to facilitate implementation, but an OP from an external OHS found her contract to hamper implementation: 'We have a contract based on obligations, and if I have to charge [the employer] for every half hour that I initiated...I may be able to sell it, but that is more difficult.' Finally, time was mentioned by most OPs and employers as both a barrier and facilitator to implementation. One OP warned: 'In a usual care setting it will probably be difficult, to talk to people 4-5 times a year.' Nevertheless, one employer stated to take time issues into account: 'I told her [the OP], if it were to take some more time, you won't hear from me.'

A lack of material resources, such as the lack of sport facilities and the lack of on-site measurement equipment, were mentioned by some OPs as barriers to implementation. For example, one OP said: 'I had to loan the measurement equipment and bring it to another location, well that was a drag every time.' Nevertheless, another OP mentioned that the availability of predefined registration forms was a facilitator to implementation: 'Those forms are indeed useful [for evaluation], to write things down as notes to yourself. But also as a reminder of what was decided, or discussed, with a person.'

Occupational physician

At the OP level, three factors were mentioned by OPs, namely personal factors, support from colleagues, and compatibility with current practice. The first factor was also highlighted by employers.

Personal factors

The personal factors refer to the OPs' knowledge and skills needed to implement the guideline. OPs and employers mentioned knowledge and skills as both barriers and facilitators to implementation. Regarding knowledge, an OP clarified 'This guideline assumes, compared to other guidelines, that we have a certain level of basic knowledge. I think that the level of basic knowledge on such processes [weight gain prevention counseling] is highly overestimated. Those are things that we (...) generally do not do in our practice.' As for skills, an OP clarified: 'When it concerns real counseling for weight loss or such, well, we have dieticians or others available in our country, they can do that a 100 times better than us.' Nevertheless, an employer addressed that the OPs' skills worked facilitating to implementation: 'I think that the OP played a big part herself, in making people enthusiastic.'

Support from colleagues

The lack of support from colleagues was perceived as a barrier to implementation by some OPs. One OP clarified: 'If you work in addiction care, then there are more people working that way, and you can (...) exchange how everyone approaches certain things. For me, this was not the case. We work solitary.'

Compatibility with current practice

OPs generally felt the guideline was compatible with their tasks, which facilitated implementation. One OP illustrated: 'A lot of people find they are overweight and do not know very well what they can do about it. And in that sense we have a clear role, together with general practitioners (GPs), to help them over that hill. I can see my added value in this. And maybe even more than a GP, because the access to my consultation hours is easier than a GPs.' On the other hand, solely conducting consultations on lifestyle was a barrier to continuation, as illustrated by an OP: 'It is very strange to dedicate an entire consultation to that [weight gain prevention] (...). I notice it has now become a regular part of my consultations, but I do not have consultations that solely address this anymore.'

Guideline

Regarding the guideline itself, four factors were mentioned by OPs and employers. These were relative advantage, observability, expectations, and ethical considerations.

Relative advantage

The factor relative advantage describes the extent to which the guideline is perceived as advantageous, as mentioned by OPs and employers. Most OPs felt implementation was facilitated by advantages, such as having a systematic way of working, tools and a structure to fall back on, having attention for the obesogenic environment, detecting comorbidity, developing client-centered counseling skills, and the frequency of follow-up consultations. Strikingly however, continuation was not facilitated after the 6-months intervention period, as all OPs answered the straightforward question 'do you still use the guideline?' with 'no'. Among employers, most found the guideline advantageous as no negative consequences were observed and employees could benefit from participation. Additionally, some employers highlighted that the guideline may facilitate continuation, as illustrated by an employer who said: 'it can help me, if we participate and if it is received positive, to put these kind of projects, and health management in general, on the map more explicitly than in the past.'

Observability

The factor observability refers to the degree to which results of the guideline are observable. All OPs found that the counseling technique facilitated implementation, because employees responded positively, and the technique was useful in other situations as well (such as sickness absence management). Moreover, OPs stated that the guideline facilitated continuation because employees organized healthy initiatives themselves. An OP illustrated: 'they [employees] used to go out to dinner, but now they go spinning. So something is starting to emerge, that there are other ways. It becomes more natural, and not something we [OP and employer] organize.' Barriers to implementation were also observed by OPs. For example, some OPs observed their counseling skills were insufficient when employees stagnated in improving their body weight or behavior.

Expectations

Participants' expectations worked as a facilitator to implementation when expectations were met, but as a barrier when expectations were not met. For example, an OP illustrated 'I hoped to put it [weight gain prevention] higher on the agenda, and that worked out.' Nevertheless, another OP stated: 'I expected that (...) it would be easier to move people to change.' One employer also illustrated expectations were a barrier to implementation: 'We expected to boost our health policy. That expectation was not met, in part due to the way our OP introduced it. We expected to receive more support from the Balance@Work organization.'

Ethical considerations

Both OPs and employers mentioned their responsibility for employees' healthy lifestyle. An employer illustrated that implementation was facilitated by their perceived responsibility: 'it remains the responsibility of the organization, from the vantage point of good entrepreneurship, to treat our employees well.' However, one OP experienced that ethical considerations could also work as a barrier to implementation, as the management team halted on-going changes to the cafeteria because people would otherwise go to a snack joint around the corner. This OP was of opinion that: 'the management team is avoiding their responsibility to change things, because you get a lot of criticism. I see that more often. People recognize that things have to be done, but whether they really do, is two steps too far.'

Discussion

The aim of this qualitative study was to identify possible barriers and facilitators to implementation of a draft occupational health guideline aimed at preventing weight gain among employees, and to provide recommendations for future implementation of the final guideline into occupational health care in the Netherlands. The results section summarized factors that should be considered when implementing the guideline. Based on these results, recommendations are provided below.

Regarding the first implementation level, the socio-political context, employers mentioned that implementation was facilitated because the guideline was compatible with current societal developments. This phenomenon has recently been mentioned by Swinburn (2011) as the 'prevention infection', illustrating that stakeholders are picking up on what is happening in society regarding obesity prevention, and are willing to implement health initiatives themselves [32]. The facilitating influence of this factor may be large for implementation of the guideline. The fact that employers are willing to invest in a healthy and productive workforce provides good opportunities to prevent weight gain in the workplace, and thereby may contribute to countering the obesity-related morbidity, mortality and health-care costs [33]. Moreover, Gortmaker et al. (2011) recently stated that this type of leadership may be necessary to increase the influence of policies that are necessary to monitor, prevent and control obesity [34].

The second implementation level, the organizational context, showed that four barriers and facilitators influenced implementation of the guideline. The first factor, management support, is a well-known barrier that can lead to obstruction of change when insufficient [35]. In the interviews, OPs explained that especially *active* support was lacking. Addressing this factor in the guideline may be necessary, because if OPs or employees believe that their management does not listen to them or care about them, they may be more likely to become apathetic [36]. Moreover, health-promotion programs have shown to work better when corporate policies send the message that managers care about their workers' well-being [37]. To increase management support, managers could be informed how their behavior impacts the probability that OPs will follow the guideline [36]. Moreover, OPs may need to explicitly discuss goals with management. Thus, forming a linkage board and improving physician-employer communication skills may facilitate management support [12].

Clear communication about the benefits of investments may also facilitate management support. On describing the role of employers in obesity prevention, Heinen and Darling (2009) argued that employers can serve their own economic interests by addressing obesity, because preventing obesity does not necessarily require new expenditures, and much benefit can be gained from creatively reallocating existing resources and benefits [33]. Thus, the guideline could list specific benefits for OPs to communicate to employers. Heinen and Darling (2009) also illustrated the facilitating influence of a culture of health at work, by provided examples of companies in which obesity prevention was facilitated when health became the norm [33]. Because this is not common in most companies, such examples could be added to the guideline as well. Finally, resources were mentioned by OPs and employers as an important factor to consider in the guideline. The interviews showed that especially OPs from an external OHS had contracts that were less compatible with the guideline. Although our results suggest that contracts based on an hourly fee for services may be more compatible to the guideline than a contract based on achievements, good agreement should be made irrespective of the type of contract, so that expenses such as time and material resources are covered [24]. The increased societal attention for prevention may facilitate uptake of preventive activities in contracts, but other initiatives may be necessary as well, such as including the opinion of a workers' representative counsel, and policy and financial incentives made by governments [38]. Moreover, OPs are recommended to discuss the added value of prevention with employers, in order to facilitate uptake of agreements regarding prevention in contracts, and thus creating possibilities to conduct preventive activities. The Netherlands Society of Occupational Medicine will do well to support OPs by providing training and tools for OPs on how to explain the added value of prevention with employers. Regarding the third implementation level, the OP, a lack of knowledge and skills was perceived as a barrier to implementation by some OPs. Moreover, some OPs stated that limited support was available from colleagues [25]. The lack of knowledge and skills contrasts data from the process evaluation, in which OPs did not perceive the guideline as too complex, and only one OP stated to miss certain knowledge to apply the guideline correctly [12]. Possibly, the fact that process data was assessed exactly after 6 months, and the implementation data was assessed after the trial 18-months trial period may explain some of this difference. Nevertheless, these quotes suggest that knowledge and skill levels should be assessed during the guideline training. Also, following the guideline training with peer medical audit groups may facilitate knowledge transfer and skill building amongst OPs. Finally, to increase compatibility with current practice, it should be considered to collaborate with qualified and experienced health professionals (such as registered dietitians or exercise health professionals), as they may be more suitable and less expensive [39,40]. However, barriers such as management support and agreements in contracts should first be overcome by OPs and employers before successful collaboration may be possible.

The fourth implementation level concerns the guideline itself. Literature suggests that besides being compatible with current practice, best practices are largely viewed as providing relative advantage and generating observable improvements [41,42]. Despite the fact that many observable advantages were mentioned by OPs and employers, OPs indicated not to have used the guideline after the intervention period. This lack of attention for continuation

may be overcome by embedding parts of the guideline in policy in order to integrate health as a behavior of a company, such as addressing the environment scan for year plans and forming a linkage board [33]. Better support by stakeholders may stimulate OPs to continue applying the guideline. Moreover, governments and health insurances could play a facilitating role in health promotion. In previous years, several preventive measures have been initiated by the government, such as the 'Healthy Choice Logo' [43] that aims to facilitate healthy food choices, and the 'Beweegkuur' [44], a lifestyle program for individuals at risk of diabetes type 2 via the general practitioner. Health insurers have indeed reimbursed such programs. Nevertheless, although these examples show that population health promotion initiatives are feasible, effects on improving and maintaining a healthy lifestyle, especially on the longer term, are often unknown and need more attention. Moreover, uptake of a description of key elements for successful implementation in the guideline may facilitate actual implementation of the guideline [45].

Another factor, participants' expectations, were also mentioned as a barrier and facilitator. This factor comprises the expectation that a given behavior will lead to a particular consequence [28]. A lack of outcome expectancy, i.e. if participants believe that a recommendation will not lead to an improved outcome, has the consequence that participants will be less likely to adhere to recommendations. Among physicians, a lack of outcome expectancy has especially been reported for preventive guidelines and counseling [24], highlighting the need to address outcome expectancies in the guideline training. Finally, some questions arose about who must take action to prevent weight gain (e.g. who is responsible for what?). According to ecological models, the responsibility for the overweight epidemic cannot be attributed to one single party, as overweight is the result of a complex web of causal factors, many of which lie outside an individuals' control [46]. The balance between personal and collective responsibility should therefore be taken into account when implementing the guideline, not only from an ethical point of view, but also because societal objections may hamper the effectiveness of the guideline [47].

The identification of the most relevant barriers and facilitators to implementation allows for the design of appropriate and effective implementation strategies [23]. A recent study highlighted that multiple implementation strategies may be more effective than single implementation strategies, especially when these strategies address different barriers to change [15]. Besides the already mentioned strategies, such as the formation of a linkage group, collaboration with other experts, formation of a peer support group, improving physician-employer communication skills and communicating benefits of investments, expectations and ethical considerations, the guideline should provide a description of key elements for successful implementation. To simplify the guideline, a one-page summary leaflet will be produced. Also, barriers and facilitators to dissemination and adoption should be considered. Finally, the barriers and facilitators mentioned by the stakeholders could be presented in a flow-chart, including strategies for each step to overcome the barriers.

Strengths and limitations

This study has several strengths and limitations. Strengths include the assessment of factors regarding the socio-political context and organizational level. These levels are often neglected in randomised controlled trials, while they can be important barriers to implementation of innovations [48]. Also, numerous studies focused on barriers and facilitators to guideline implementation among physicians [24-26], but none focused specifically on occupational physicians, or on lifestyle-related guidelines. Moreover, the factors mentioned in this study were obtained from relevant stakeholders, and selected according to a systematic approach and theoretical framework [49]. Finally, a strength of this study is that the obtained factors were derived from a heterogeneous sample of OPs and employers, resulting in a broad overview of barriers and facilitators that may also be useful for other developers of clinical practice guidelines.

Meeting the identified barriers and facilitators to implementation however, may not have full impact on guideline implementation in reality, as these factors were mentioned by a small sample of motivated participants [15,42], and did not concern dissemination and adoption of the guideline [14]. Another limitation is that the researchers and OPs were acquainted with each other, which may have caused bias [16]. Also, the Balance@Work methods and strategies were mainly focused on changing employees behavior, while attention for changing OPs behavior may also be important [24]. Moreover, interviewed employees were disregarded in this study because they mainly addressed factors that were related to the process evaluation of the guideline. However, employees should not be neglected as stakeholder when implementing the guideline.

Conclusion

There is a broad societal basis and organizational support among OPs and employers for implementation of the guideline, but resources, structures and support for continuation should receive more attention in the guideline and training. Results from the present study can be used to increase the chance of successful implementation of the guideline into occupational health practices throughout the Netherlands, and thereby may contribute to the prevention of weight gain.

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