

The cover features stylized leaf illustrations in purple and green. The leaves are outlined in white and filled with fine lines. They are arranged in a flowing, organic pattern across the top and bottom of the page. The background consists of large, overlapping circles in shades of purple and green.

Sustainable employability of workers in a vulnerable position

The role of occupational health
professionals and supervisors

Rosanne Schaap

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Colofon

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VRIJE UNIVERSITEIT

SUSTAINABLE EMPLOYABILITY OF WORKERS IN A VULNERABLE POSITION

The role of occupational health professionals and supervisors

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor aan
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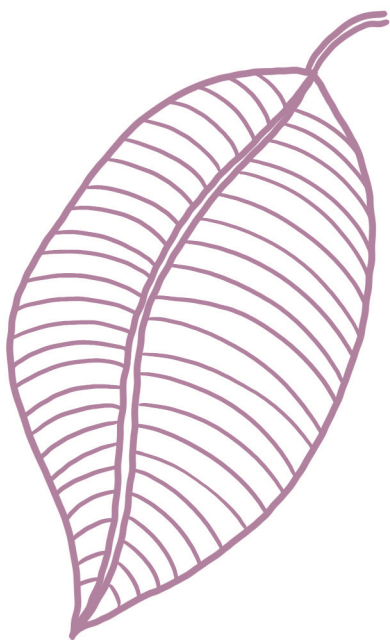
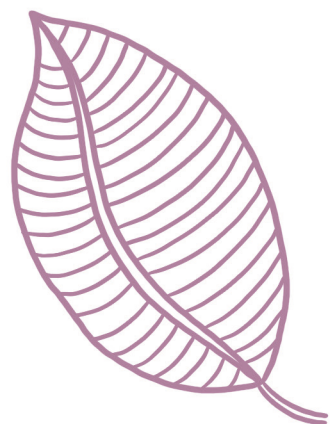
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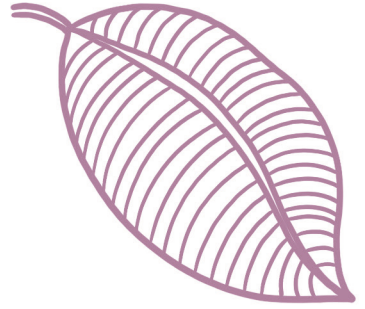
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Table of content

Chapter 1	General introduction	7
Part I	The effects of exit from work among workers in a high and low socioeconomic position	21
Chapter 2	The effects of exit from work on health across different socioeconomic groups: A systematic literature review	23
Part II	The role of occupational health professionals in supporting lower socioeconomic position workers with problems on multiple life domains	55
Chapter 3	Improving the health of workers with a low socioeconomic position: Intervention Mapping as a useful method for adaptation of the Participatory Approach	57
Chapter 4	The Grip on Health intervention to prevent health problems among workers with a lower socioeconomic position: a pilot implementation study	87
Chapter 5	A context analysis with stakeholders' views for future implementation of interventions to prevent health problems among employees with a lower socioeconomic position	129
Part III	The role of supervisors in supporting workers with a work disability	165
Chapter 6	"I noticed that when I have a good supervisor, it can make a lot of difference." A qualitative study on guidance of employees with a work disability to improve sustainable employability	167
Chapter 7	Training for supervisors to improve sustainable employment of employees with a work disability: a longitudinal effect and process evaluation from an intervention study with matched controls	199
Chapter 8	General discussion	241
Appendix	Summary	270
	Samenvatting	276
	About the author	284
	List of publications	285
	Portfolio	288
	Dankwoord	292





Chapter 1

General introduction



General Introduction

The health and sustainable employability of workers in a vulnerable position

I would like to start this thesis with the well-known phrase 'work is healthy.' People with a job are healthier than people without a job. Work provides income, social contacts, and is often a source of personal identity, which results in good health (1). In contrast, work can also negatively affect health or vice versa; unemployment has negative health consequences (2, 3) and poor health is associated with job loss and disability benefits (4-6). However, some workers face more difficulties to remain sustainably employed. This group consists for a large part of workers with a lower socioeconomic position (SEP) (6, 7). Workers with a lower SEP can include people with a lower education or income level and/or with a lower educated or blue-collar occupation. Workers with a lower SEP are in a more vulnerable position as they not only face more difficulties to (re-)enter the labor market (8) and remain sustainably employed, but also are more likely to exit paid employment (4).

Previous research identified why workers with a lower SEP face more difficulties to remain sustainably employed. They more often have unhealthy working conditions, such as physically active jobs, irregular working hours, low job control, high job insecurity and low paid work (9-11). Unhealthy living conditions are also more prevalent among this group of workers, such as smoking, physical inactivity and unhealthy housing conditions (12). Unhealthy working and living conditions may increase the chance of physical and/or mental health problems, and therefore make a significant contribution to socioeconomic health inequalities (10, 12). Furthermore, workers with a lower SEP often have problems on multiple life domains (9, 13). This means that they face a combination of health problems and other problems in- and outside the workplace, such as unhealthy working and living conditions, financial problems or other private or social issues. Problems on multiple life domains are often strongly intertwined (10, 12, 14, 15), making it even more complex for the individual worker to solve these problems and remain sustainably employed. To improve their health and sustainable employability, we should simultaneously focus on factors in multiple life domains. This asks for a more holistic approach, which is in line with the definition of the Positive Health approach '*the ability to adapt and manage oneself in the light of the physical, emotional and social challenges of life*' (16).

Workers who face more difficulties to remain sustainably employed, also consist for a large part of workers with a work disability (7). Next to workers with a lower SEP, workers with a work disability also face more difficulties to enter the labor market and remain sustainably employed due to an illness, disorder, or disability (17). Workers with a work disability can include people with a (mild) intellectual disability, psychological disability, physical disability, and/or learning delay.

Research shows that labor force participation is the lowest among this group of workers (18). Moreover, problems on multiple life domains are also more prevalent among workers with a work disability (13, 19), which is in accordance with lower SEP workers, also a major barrier for work participation (15, 19).

Given the above, parallels exist between workers with a lower SEP and workers with a work disability; i.e. vulnerable position in the labor market, having problems to (re-)enter the labor market, to be sustainably employed and often facing health problems in combination with problems on other life domains. There is also substantial overlap between workers with a lower SEP and workers with a work disability. A large part of workers with a work disability also has a lower socioeconomic position, as people with a disability more often have a lower educational level or little to no work experience (20). Besides, it is also plausible that lower SEP workers more often have a work disability, as they have lower health status and thereby higher chance to develop disabilities and less educational opportunities (21). Hence, both of these groups have in common that they are in a vulnerable position in the labor market, which increases the risk to drop early out of the labor market. Thus, facilitating sustainable employment and the prevention of job loss is what we aim to achieve in this thesis for workers in a vulnerable position, namely workers with a lower SEP and workers with a work disability.

Facilitating sustainable employability of workers in a vulnerable position

Sustainable employability can be defined as *'The extent to which workers can achieve and maintain opportunities for valuable work functioning (capabilities) and enjoy the necessary conditions that allow them to make a valuable contribution through their work, now and in the future, while safeguarding their health and welfare'* (22). Central in this definition are the capabilities, which refers to skills and environmental conditions of an individual to achieve valuable work functioning. This definition emphasizes that individual skills, but also factors in the work and personal environment are important to remain sustainably employed.

Individual skills for sustainable employment

In the Netherlands, the government partially carries the responsibility for the health and wellbeing of all citizens. In the past 20 years changes have taken place in laws and regulations, reflecting a change from a welfare state to a participation society. Everyone who is considered able, must take responsibility for their own health and well-being. According to opponents of this participation society, too much emphasis is placed on the individual responsibility of citizens (23). However, it is increasingly pointed out that the ability of people to make 'healthy' choices is overestimated (23). Not all people are equipped to do that due to a lower health literacy. Health literacy enables people to obtain, understand, appraise, and use information to make decisions and take actions in ways that will have a positive

impact on health (24). A lower health literacy may be more prevalent among certain groups in the population, such as workers with a lower SEP and workers with an intellectual disability (25, 26). Poor social and economic conditions which are more prevalent among workers in a vulnerable position are associated with a lower health literacy and may result in poor health outcomes (27). Therefore, strengthening health literacy of people in vulnerable positions could reduce health disparities. For this, workers need an enabling environment. In the next paragraph, we describe which factors in the personal and work environment play a role in the sustainable employability of workers in a vulnerable position.

Factors in the work and personal environment for sustainable employment

Accumulated evidence found that factors in the work environment play a key role in the sustainable employability of workers. The job demand-job resources model (JD-R model) provides an overarching framework to explain how the work environment can affect sustainable employability (28). According to this model psychosocial factors, which can be divided into job demands and job resources, are linked to a range of outcomes such as workers' well-being, health, and productivity (29-32). For instance, autonomy and social support have a positive impact on well-being and performance (31), and psychological job demands, and low decision latitude have a negative impact on health (30, 32). Furthermore, psychosocial factors in the work environment are often less favorable among workers in a vulnerable position and may partially explain socioeconomic health inequalities (33, 34). Considering this information, it is important for organizations to safeguard work environments that facilitate sustainable employment.

Beyond the work environment, factors in the personal environment, such as the circumstances in which people live, social networks or access to (financial) resources also tend to play a role in the health and thereby sustainable employability of workers. For instance, social networks can provide relevant health related information to perform healthy behaviors and provide mental support (35). However, access to and the number of resources is more limited among workers in a vulnerable position, which may lead to poorer health outcomes (36). According to the World Health Organization, factors in the personal environment, besides health care and a healthy lifestyle, can be summarized into social determinants of health (SDH). The WHO states that "*SDH are the non-medical factors that influence health and consist of the conditions in which people are born, grow, live and age, and the wider set of forces and systems shaping the conditions of daily life*" (37).

In summary, the environment of workers strongly influences the ability of people (i.e., individual skills) to deal with (health) problems, which is in line with the definition of sustainable employability and SDH. Therefore, to improve the health and sustainable employability of workers, and especially of those in a vulnerable

position, it is not just a matter of improving individual skills. We should also support workers with enabling factors in the work and personal environment to effectively deal with problems that affect their sustainable employability. Therefore, it is important to investigate how we can support workers in a vulnerable position on how to effectively deal with these (health) problems.

The role of occupational health professionals in supporting workers in a vulnerable position

To improve the health and sustainable employability of workers in a vulnerable position occupational health professionals (OHPs) can provide adequate support. OHPs are professionals who provide advice and/or guidance to ensure a safe and healthy work environment, such as occupational physicians (OPs) or occupational nurses. In the Netherlands, the Working Conditions Act forms the basis for general rights and duties for employers and workers to ensure safe and healthy working environment. Employers are required to have a contract with an occupational health service and/or OHP, in which the acquired services are specified. Employers are also required to seek support from an OP in case of long-term sickness absence (i.e., more than 6 weeks in the Netherlands), and to perform risk assessments and evaluations on health and safety (RI&E in Dutch). Based on these risk assessments and evaluations OHPs can adapt work tasks and/or working conditions to reduce health risks or implement various tools, such as a preventive medical examination for the early detection of work-related health risks. Workers are also by law enabled to visit, at any time, an OP to receive preventive advice on work-related health problems. However, OHPs still spend most of their time providing advice to workers already on sick leave (38). This is unfortunate, as OHPs can play a key role in the early detection of work-related health risks and problems and initialize actions to prevent early drop-out from the labor market, especially among workers in a vulnerable position.

Considering the extensive role of OHPs in the workplace, they could also be very well suited to play a role in the early detection of and solving non-work-related health risks and problems. However, existing interventions mainly focus on the identification of and solving work-related health risks and problems. For example, in the Participatory Approach workers mainly identify and solve work-related problems under the guidance of an OHP and with involvement of relevant stakeholders at the workplace (39). Even though, the use of the Participatory Approach could also involve identifying and solving non-work-related problems that hinder return to work. Another example is job crafting, wherein workers make proactive changes in their job demands and job resources to optimize the fit between their job and personal needs at work (40). Work-related health risks and problems are important to address, but there is a need for interventions that solve work- and non-work-related health risks and problems. Problems both in-

and outside the workplace could play a role in the sustainable employability. For this, more knowledge is needed on how OHPs can fulfill the role of supporting workers in solving problems on multiple life domains, both in- and outside the workplace. Interventions that focus on problems on multiple life domains are especially important for workers in a vulnerable position. However, literature on how to address and support workers with problems on multiple life domains is scarce. Taken this into account, we aim to develop and evaluate a preventive intervention for OHPs to support workers with a lower SEP solving problems on multiple life domains.

The role of supervisors in supporting workers in a vulnerable position

To improve the health and sustainable employability of workers in a vulnerable position, supervisors could also play a vital role (41). Ample research shows that social support from supervisors can have a positive impact on workers' motivation, well-being, and health (22, 28). For example, workers receiving positive feedback that they are performing well, could subsequently improve their performance and motivation to work (42). Furthermore, a good relationship with their supervisor and receiving social support is essential for workers to remain working (43, 44). Support from supervisors could also play a role in addressing unfavorable factors, such as physical or psychological job demands. For instance, a study among workers with intellectual disabilities, indicated that supervisor support reduced job demands (45). Supervisors could help workers to adjust their work to their needs by making appropriate adjustments in the workplace or in their work tasks. Also, more support can be generated if supervisors are involved, which may result in a higher chance that adjustments will take place and maintained (46). Hence, (social) support from supervisors plays a key role in achieving sustainable employability (47), especially for workers in a vulnerable position that more often face unfavorable factors in the workplace.

Over the past years, many factors have been identified on which supervisors can act to improve the sustainable employability of workers with a work disability (48, 49). For example, for workers with an intellectual disability, social support and having autonomy is positively associated with job satisfaction (50, 51). Subsequently, leadership interventions specifically for the guidance of workers with a work disability have been developed, but information on the effectiveness of these interventions is lacking. Furthermore, many studies have been conducted regarding the guidance of supervisors at the workplace. However, to our knowledge these studies mainly focused on the perspectives of supervisors and colleagues, and not on the needs of workers from the perspective of the worker with a disability themselves. The perspectives of workers with a disability may differ from the perspectives of their supervisors or colleagues without a work disability. Taken this into account, we aim to explore the needs of workers with

a work disability regarding the guidance from their supervisors and evaluate an intervention for supervisors to improve the guidance of workers with a work disability at the workplace.

Aims and outline of this thesis

Considering the current research gaps, the overall aim of this thesis is to address the importance of improving the health and sustainable employability of workers in a vulnerable position, more specifically workers with a lower SEP and workers with a work disability, and to investigate how workers with a lower SEP and with problems on multiple life domains can be adequately supported by OHPs, and how workers with a work disability can be adequately supported by supervisors at the workplace. The specific aims are:

1. To investigate the differences of exit from work on health among workers with a low SEP, as opposed to workers with a high SEP.
2. To develop and evaluate a preventive intervention for OHPs to improve the health and sustainable employability of workers with a lower SEP and with problems on multiple life domains, and to explore facilitators and barriers for implementation of these types of preventive interventions in occupational health practice.
3. To explore the needs of workers with a work disability with respect to the guidance of supervisors in relation to their sustainable employability and to evaluate an intervention for supervisors to improve the sustainable employability of workers with a work disability.

The first aim is addressed in **chapter 2** and describes the results of a systematic review, wherein the effects of exit from work on health were investigated among both workers with a low or high SEP. The remaining chapters focus on evaluations of interventions that were implemented in practice.

Chapter 3, 4 and 5 addresses the second aim and focuses on workers with a lower SEP and the role of OHPs in addressing problems on multiple life domains. **Chapter 3** outlines the development of a participatory intervention for OHPs to identify and solve health problems on multiple life domains among workers with a lower SEP. **Chapter 4** describes the process evaluation of this intervention in a pilot implementation study. **Chapter 5** builds on that and investigates contextual factors for implementation of these types of interventions in occupational health practice.

Chapter 6 and 7 addresses the third aim and focuses on workers with a work disability and the role of supervisors. **Chapter 6** describes the experiences of workers with a work disability regarding the guidance of their supervisors.

Chapter 7 describes the evaluation of an intervention for supervisors to improve the guidance of workers with a work disability, including an effect and process evaluation.

The last chapter, **chapter 8** summarizes and discusses the main findings and discusses methodological considerations. This chapter will be completed with recommendations for research, policy and practice and the main conclusions of this thesis.

References

1. Waddell G, Burton AK. Is work good for your health and well-being? TSO; 2006.
2. McKee-Ryan F, Song Z, Wanberg CR, Kinicki AJ. Psychological and Physical Well-Being During Unemployment: A Meta-Analytic Study. *Journal of Applied Psychology*. 2005;90(1):53-76.
3. Amiri S. Unemployment associated with major depression disorder and depressive symptoms: a systematic review and meta-analysis. *International Journal of Occupational Safety and Ergonomics*. 2022;28(4):2080-92.
4. Robroek SJ, Rongen A, Arts CH, Otten FW, Burdorf A, Schuring M. Educational inequalities in exit from paid employment among Dutch workers: the influence of health, lifestyle and work. *PLoS One*. 2015;10(8):e0134867.
5. Van Rijn RM, Robroek SJ, Brouwer S, Burdorf A. Influence of poor health on exit from paid employment: a systematic review. *Occupational and Environmental Medicine*. 2014;71(4):295-301.
6. Rohrbacher M, Hasselhorn HM. Social inequalities in early exit from employment in Germany: a causal mediation analysis on the role of work, health, and work ability. *Scandinavian Journal of Work, Environment & Health*. 2022;48(7):569-78.
7. De Graaf-Zijl M, Josten E, Boeters S, Eggink E, Bolhaar J, Ooms I, et al. De onderkant van de arbeidsmarkt in 2025. Sociaal Cultureel Planbureau; 2022.
8. Virtanen P, Janlert U, Hammarström A. Health status and health behaviour as predictors of the occurrence of unemployment and prolonged unemployment. *Public Health*. 2013;127(1):46-52.
9. Burdorf A, Robroek SJ, Schuring M. Kennissynthese Werk (en) is Gezond. ZonMw; 2016.
10. Dieker ACM, Ijzelenberg W, Proper KI, Burdorf A, Ket JCF, van der Beek AJ, et al. The contribution of work and lifestyle factors to socioeconomic inequalities in self-rated health – a systematic review. *Scandinavian Journal of Work, Environment & Health*. 2019;45(2):114-25.
11. Brønholt RL, Hansen MB, Islamoska S, Christensen U, Grynderup MB, Nabe-Nielsen K. Physical and psychosocial work factors as explanations for social inequalities in self-rated health. *International Archives of Occupational and Environmental Health*. 2021;94(2):335-46.
12. Moor I, Spallek J, Richter M. Explaining socioeconomic inequalities in self-rated health: a systematic review of the relative contribution of material, psychosocial and behavioural factors. *Journal of Epidemiology and Community Health*. 2017;71(6):565-75.
13. Bosselaar H, Maurits E, Molenaar-Cox P, Prins R. Multiproblematiek bij cliënten, verslag van een verkenning in relatie tot (arbeids) participatie. Meccano en Astri; 2010.
14. Heikkilä K, Fransson EI, Nyberg ST, Zins M, Westerlund H, Westerholm P, et al. Job Strain and Health-Related Lifestyle: Findings From an Individual-Participant Meta-Analysis of 118 000 Working Adults. *American Journal of Public Health*. 2013;103(11):2090-7.
15. Berthoud R. Multiple disadvantage in employment: A quantitative analysis. *Policy Commons*; 2003.
16. Huber M, Knottnerus JA, Green L, van der Horst H, Jadad AR, Kromhout D, et al. How should we define health? *BMJ*. 2011;343:d4163.

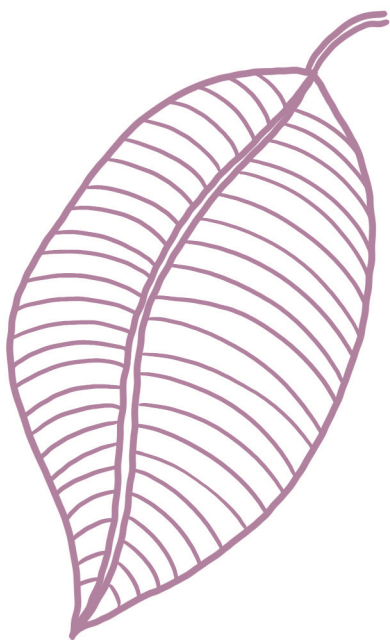
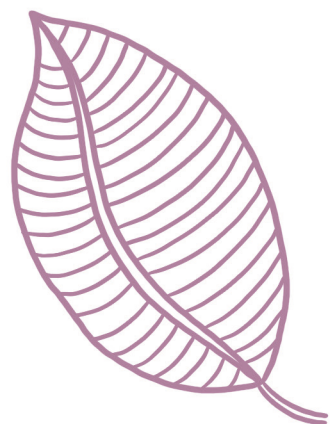
17. Berendsen E, Van Deursen C, Dumhs L, Stoutjesdijk M. UWV Monitor Arbeidsparticipatie Arbeidsbeperkten 2020. Amsterdam: UWV; 2021.
18. Cozijnsen R, de Putter I, Spreeuwenberg P, Rijken M. Werk en inkomen: kerngegevens en trends. Utrecht: Nivel; 2015.
19. Brongers KA, Hoekstra T, Roelofs PD, Brouwer S. Prevalence, types, and combinations of multiple problems among recipients of work disability benefits. *Disability and Rehabilitation*. 2022;44(16):4303-10.
20. De Graaf-Zijl M, Raaij N. Scholing voor mensen met een arbeidsbeperking. UWV Kennisverslag 2021. Amsterdam: UWV; 2021.
21. Pharos. Sociaal economische gezondheidsverschillen (SEGV). 2022 [Available from: Sociaal economische Gezondheidsverschillen (SEGV)(pharos.nl)].
22. Van der Klink JJ, Bültmann U, Burdorf A, Schaufeli WB, Zijlstra FR, Abma FI, et al. Sustainable employability - definition, conceptualization, and implications: A perspective based on the capability approach. *Scandinavian Journal of Work, Environment & Health*. 2016;42(1):71-9.
23. Bovens M, Keizer A-G, Tiemeijer W. Weten is nog geen doen: een realistisch perspectief op redzaamheid. Wetenschappelijke Raad voor het Regeringsbeleid (WRR); 2017.
24. Nutbeam D, Lloyd JE. Understanding and Responding to Health Literacy as a Social Determinant of Health. *Annual Review of Public Health*. 2021;42:159-73.
25. Stormacq C, Van den Broucke S, Wosinski J. Does health literacy mediate the relationship between socioeconomic status and health disparities? Integrative review. *Health Promotion International*. 2018;34(5):e1-e17.
26. Geukes C, Bruland D, Latteck A-D. Health literacy in people with intellectual disabilities: A mixed-method literature review. *Kontakt*. 2018;20(4):e416-e23.
27. Schillinger D. The Intersections Between Social Determinants of Health, Health Literacy, and Health Disparities. *Studies in Health Technology and Informatics*. 2020;269:22-41.
28. Bakker AB, Demerouti E. The job demands-resources model: State of the art. *Journal of Managerial Psychology*. 2007;22(3):309-28.
29. Nieuwenhuijsen K, Bruinvels D, Frings-Dresen M. Psychosocial work environment and stress-related disorders, a systematic review. *Occupational Medicine*. 2010;60(4):277-86.
30. Stansfeld S, Candy B. Psychosocial work environment and mental health—a meta-analytic review. *Scandinavian Journal of Work, Environment & Health*. 2006;32(6):443-62.
31. Nielsen K, Nielsen MB, Ogbonnaya C, Känsälä M, Saari E, Isaksson K. Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis. *Work & Stress*. 2017;31(2):101-20.
32. Theorell T, Hammarström A, Aronsson G, Träskman Bendz L, Grape T, Hogstedt C, et al. A systematic review including meta-analysis of work environment and depressive symptoms. *BMC Public Health*. 2015;15:738.
33. Reinhardt JD, Wahrendorf M, Siegrist J. Socioeconomic position, psychosocial work environment and disability in an ageing workforce: a longitudinal analysis of SHARE data from 11 European countries. *Occupational and Environmental Medicine*. 2013;70(3):156-63.
34. Hoven H, Siegrist J. Work characteristics, socioeconomic position and health: a systematic review of mediation and moderation effects in prospective studies. *Occupational and Environmental Medicine*. 2013;70(9):663-9.

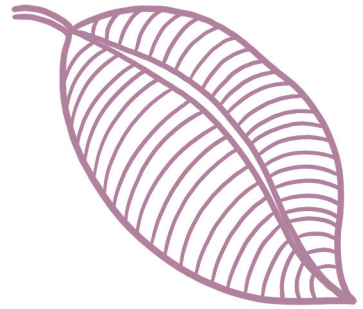
35. André S, Kraaykamp G, Meuleman R. Een (on) gezonde leefstijl: opleiding als scheidslijn. Sociaal en Cultureel Planbureau (SCP); 2018.
36. Uphoff EP, Pickett KE, Cabieses B, Small N, Wright J. A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities. *International Journal for Equity in Health*. 2013;12:54.
37. World Health Organization. Social Determinants of Health [Available from: https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1].
38. Sakowski P, Marcinkiewicz A. Health promotion and prevention in occupational health systems in Europe. *International Journal of Occupational Medicine and Environmental Health*. 2019;32(3):353-61.
39. Huysmans MA, Schaafsma FG, Viester L, Anema JR. Multidisciplinaire Leidraad Participatieve Aanpak op de Werkplek – Hoofddocument en achtergronddocument. VU Medisch Centrum: EMGO Instituut voor onderzoek naar Gezondheid en Zorg; 2016.
40. Tims M, Bakker AB, Derks D. Development and validation of the job crafting scale. *Journal of Vocational Behavior*. 2012;80(2):173-86.
41. Schreuder JA, Groothoff JW, Jongsma D, van Zweeden NF, van der Klink JJL, Roelen CAM. Leadership Effectiveness: A Supervisor's Approach to Manage Return to Work. *Journal of Occupational Rehabilitation*. 2013;23(3):428-37.
42. Akkermans J, Brenninkmeijer V, Van Den Bossche SN, Blonk RW, Schaufeli WB. Young and going strong? A longitudinal study on occupational health among young employees of different educational levels. *Career Development International*. 2013;18(4):416-35.
43. Oude Hengel KM, Blatter BM, Geuskens GA, Koppes LL, Bongers PM. Factors associated with the ability and willingness to continue working until the age of 65 in construction workers. *International Archives of Occupational and Environmental Health*. 2012;85(7):783-90.
44. Den Boer H, van Vuuren T, de Jong J. Job Design to Extend Working Time: Work Characteristics to Enable Sustainable Employment of Older Employees in Different Job Types. *Sustainability*. 2021;13(9):4719.
45. Flores N, Jenaro C, Orgaz BM, Martín-Cilleros MV. Understanding Quality of Working Life of Workers with Intellectual Disabilities. *Journal of Applied Research in Intellectual Disabilities*. 2011;24(2):133-41.
46. Daniels K, Gedikli C, Watson D, Semkina A, Vaughn O. Job design, employment practices and well-being: a systematic review of intervention studies. *Ergonomics*. 2017;60(9):1177-96.
47. Jabeen Q, Nadeem MS, Raziq MM, Sajjad A. Linking individuals' resources with (perceived) sustainable employability: Perspectives from conservation of resources and social information processing theory. *International Journal of Management Reviews*. 2021;24(2):233-54.
48. Van Ooijen R, Koning PW, Boot CR, Brouwer S. The contribution of employer characteristics to continued employment of employees with residual work capacity: evidence from register data in The Netherlands. *Scandinavian Journal of Work, Environment & Health*. 2021;47(6):435-45.
49. Vooijs M, Putnik K, Hermans L, Fermin B, Hazelzet AM, van Genabeek JA. Duurzame plaatsing in werk van werknemers met een arbeidsbeperking. Leiden: TNO; 2019.
50. Kocman A, Weber G. Job Satisfaction, Quality of Work Life and Work Motivation in Employees with Intellectual Disability: A Systematic Review. *Journal of Applied Research in Intellectual Disabilities*. 2018;31(1):1-22.

51. Akkerman A, Janssen CG, Kef S, Meininger HP. Perspectives of Employees with Intellectual Disabilities on Themes Relevant to Their Job Satisfaction. An Explorative Study using Photovoice. *Journal of Applied Research in Intellectual Disabilities*. 2014;27(6):542-54.

Part I

**The effects of exit from work among workers in
a high and low socioeconomic position**





Chapter 2

The effects of exit from work on health across different socioeconomic groups: A systematic literature review

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Abstract

Exit from work leads to different effects on health, partially depending on the socioeconomic status (SES) of people in the work exit. Several studies on the effects of exit from work on health across socioeconomic groups have been performed, but results are conflicting. The aim of this review is to systematically review the available evidence regarding the effects of exit from work on health in high and low socioeconomic groups. A systematic literature search was conducted using PubMed, Embase, Web of Science, CINAHL and PsycINFO. Search terms related to exit from work, health, SES, and design (prospective or retrospective). Articles were included if they focused on: exit from work (early/statutory retirement, unemployment, or disability pension); health (general, physical, or mental health and/or health behaviour); SES (educational, occupational and/or income level); and inclusion of stratified or interaction analyses to determine differences across socioeconomic groups. This search strategy resulted in 22 studies. For general, physical, or mental health and health behaviour, 13 studies found more positive effects of exit from work on health among employees with a higher SES compared to employees with a lower SES. These effects were mainly found after early/statutory retirement. In conclusion, the effects of exit from work, or more specific the effects of early/statutory retirement on health are different across socioeconomic groups. However, the findings of this review should be interpreted with caution as the studies used heterogeneous health outcomes and on each health outcome a limited number of studies was included. Yet, the positive effects of exit from work on health are mainly present in higher socioeconomic groups. Therefore, public health policies should focus on improving health of employees with a lower SES, in particular after exit from work to decrease health inequalities.

Keywords: Exit from work; General health; Health behaviour; Mental health; Physical health; Socioeconomic groups; Socioeconomic status; Systematic review.

Introduction

A rising life expectancy and decreasing birth rates causes a demographic transition in which Western society is confronted with an ageing population (1, 2). This means, relatively fewer workers to compensate for the elderly not being active in the workforce. The percentage of retired elderly compared to the active working population is expected to increase further in Europe, i.e. from 28% in 2014 to 50% in 2060 (3). This poses great challenges for the welfare state, such as providing pensions and long-term healthcare. To keep the welfare state affordable, many Western countries raised their statutory retirement age (4).

Exit from work can be viewed as a major life transition, as it is accompanied by social, psychological, and environmental changes in one's life (5). Social changes may involve the increase of social contact, because more time can be spent with family and friends; psychological changes could be role loss, as people's identity might be determined by their job; and environmental changes could be loss of adverse or favorable work characteristics, such as high mental demands or receiving appreciation at work. Two recent systematic literature reviews on the effects of exit from work on health concluded that exit from work has both positive and negative effects on health (6, 7). For example, people with work related low back pain, will likely benefit from the work exit, because it can take away the source of their pain (i.e. physical health) or physical activity may increase, because exit from work provides more time for leisure-time physical activity (i.e. health behaviour). Otherwise, exit from work can also have adverse health effects, such as the increase of stress caused by the loss of income and work responsibilities (i.e. general health and mental health). Hence, exit from work holds different effects on health, depending on the circumstances in which a transition takes place (6-10). Moreover, effects may be different for various health outcomes, such as general, physical, or mental health and health behaviour (6, 7).

The effects of exit from work on health may also be different across people from low or high socioeconomic groups (10-12), which is determined by occupation, education, and income (13, 14). Until now, studies have shown contradictory results regarding the effects of exit from work on health for different socioeconomic groups. Previous research demonstrated that people with a higher SES experience a larger decline in general health compared to people with a lower SES (15). Conversely, other studies demonstrated that people with a higher SES experience an increase in mental and physical health compared to people with a lower SES (16, 17). Thus, evidence with regard to the relationship between health and exit from work among different socioeconomic groups remains inconclusive. Therefore, the aim of this review is to systematically review the available evidence regarding the effects of exit from work on health in high and low socioeconomic groups.

Methods

Search strategy and study selection

A systematic literature search was conducted in the databases PubMed, Embase, Web of Science, CINAHL and PsycINFO up to November 1, 2016. Search terms related to: 1) exposure, i.e. exit from work, 2) outcome, i.e. health, 3) strata, i.e. SES and 4) design, i.e. prospective or retrospective. The search terms can be found in the supplementary files. Articles identified in the databases were combined and duplicates were removed. For final inclusion, articles had to fulfil all of the following inclusion criteria. First, an article was eligible when the population had left the workforce at the end of the study period. Exit from work was defined as “withdrawal of older workers (i.e. 55 years or older) from paid working life” and was differentiated in three types of exit routes: 1) statutory retirement or early retirement taking place before the statutory retirement age – i.e. via an early retirement scheme, 2) unemployment and 3) disability pension (6, 8, 18). Hereby, older workers were 55 years or older, because on average workers were 55 years old when they left the workforce (19). Second, an article had to report on at least one health component, before and after the work exit. Health was conceptualized as general, physical, or mental health and/or health behaviour. General health refers to how people perceived their health in general (e.g. how do you rate your health in general), physical health refers to physiological body functions (e.g. pain and disabilities), mental health refers to psychological wellbeing (e.g. mental functioning and depression) and health behaviour refers to behaviours that will likely influence one’s health either positive or negative (e.g. diet and physical activity) (6, 7, 20-22). Also, the health outcome BMI was categorized under health behaviours, because overweight and obesity are considered as a risk factor for non-communicable diseases and may result from the unhealthy behaviours having an unhealthy diet and physical inactivity (23). Third, an article had to include at least one indicator of SES (i.e. educational, occupational and/or income level) (13, 14), and included analyses to distinguish health effects across socioeconomic groups, either through stratification or an interaction term. This means that articles were excluded that only included SES as a confounding factor. Fourth, only articles with a longitudinal study design (either retrospective or prospective) were included. Fifth, articles published from 2001 were included to only provide information on the effects of exit from work processes that are taking place right now. Sixth, only articles in English and published in a peer reviewed journal were included.

Two reviewers (RS and AdW) independently started with the screening of 600 articles on title and abstract. Thereafter, discrepancies were discussed in order to come to agreement on the interpretation and completeness of the inclusion criteria. When all discrepancies were discussed, the remaining articles (i.e.

4165) were screened by one reviewer (RS) on title and abstract. Screening of 4765 articles on title and abstract resulted in 108 articles that were screened on full text. Screening of full-text articles was performed by two reviewers (RS and AdW) independently. Discrepancies were discussed until consensus was reached and a third reviewer (CB) was consulted in case consensus could not be reached. Finally, references of the included articles were checked for other possibly relevant articles.

Data extraction and quality assessment

One reviewer (RS) performed the data extraction by using a predefined data-abstraction form, extracting the following data per study: author, publication year and country, population (i.e. dataset, cohort or register, n, sex and age), design (i.e. type and follow-up period) statistical analyses (i.e. stratification and/or interaction term), assessment of exit route (i.e. early/statutory retirement, unemployment or disability pension), health and SES, and the results of the effects of exit from work on health across socioeconomic groups. In case of uncertainty about the extracted data a second reviewer (AdW) was consulted.

The quality assessment was performed by two reviewers (RS and AdW) independently and based on a set of nine predefined criteria (Table 1). The criteria were predominantly based on one review that focused solely on the relation between exit from work and health and on already existing criteria lists in the field of public health (6, 24-26). Each quality criterion was rated positive (+), negative (-) or not applicable (n.a.). Criteria 3, 4 and 5, were rated not applicable in studies with register data, because they could not provide information on participation rates. Differences in scores between reviewers (RS and AdW) were discussed and were resolved in consensus meetings. Studies with a minimum of 5 points (> 50%) were regarded as of high methodological quality (6, 24, 25). Studies in which criteria 3, 4 and 5 were rated not applicable and with a minimum of 3 points (> 50%) were regarded as of high methodological quality.

The data extraction and quality assessment were performed per study to avoid multiplication. This means that some articles resulting from the same dataset, register or cohort were merged. Nevertheless, many articles resulting from the same dataset, register or cohort were not merged as they differed with regard to the health outcome. Consequently, different (smaller) datasets were retrieved from one large dataset, resulting in different studies.

Table 1. Criteria list for assessment of methodological quality of longitudinal studies (6, 24, 26)

Criteria ^A
Participation
1. Adequate description of source population (i.e. clear in- and exclusion criteria)
2. Adequate description of sampling frame, recruitment methods, period, and place of recruitment
3. Participation rate at baseline at least 80% or non-response not selective (i.e. selected population does not significantly differ in key characteristics from source population)
Attrition
4. Provision of the response rate (<i>n</i> or %) during follow-up measurements
5. Response at follow-up at least 80% of the <i>n</i> at baseline or non-response during follow-up measurements not selective (i.e. follow-up population does not significantly differ in key characteristics from selected population)
Data collection
6. Temporal determination of the work exit ^B
Data analyses
7. Statistical model used appropriate and described with point estimates and measures of precision (i.e. CI or SE)
8. Population size suitable for answering the research question
9. Important confounders or effect modifiers (i.e. age, sex) identified and adjusted for (i.e. stratification and/or interaction term)

A: rating of criteria: + = positive; - = negative; n.a. = not applicable; B: Temporal determination of the work exit means how regular this transition was assessed. Studies were rated positive if exit from work was determined on an annual basis. If this was not the case studies were rated negative. Abbreviations: *n*=sample size; CI=confidence interval; SE=standard error

Results

Study selection

The flow chart, presented in Fig. 1, demonstrates the study selection. The search strategy yielded 8961 articles. After removing duplicates, 4765 articles were screened on title and abstract, and subsequently, 108 articles on full text. The search resulted in 19 articles (17, 27-44). The references of these articles were screened, which resulted in five additional articles (15, 45-48). In total, 22 studies were included in this review.

Study characteristics

The study characteristics are presented in Tables 2-4. The most remarkable differences are described here. Sample sizes ranged from 186 to 245,082 participants (35, 47). For measuring the effects of exit from work on health, studies mostly used the following datasets cohorts and registers; the Health and

Retirement Study (HRS)(8 studies)(17, 27, 29-31, 34, 38, 39, 41, 45), French national gas and electricity company cohort (GAZEL cohort)(5 studies)(40, 42-44, 48), Whitehall II study (2 studies)(33, 37) and Longitudinal Aging Study Amsterdam (LASA)(2 studies)(15, 35). All studies were prospective, and the follow-up period ranged from 4 to 18 years.

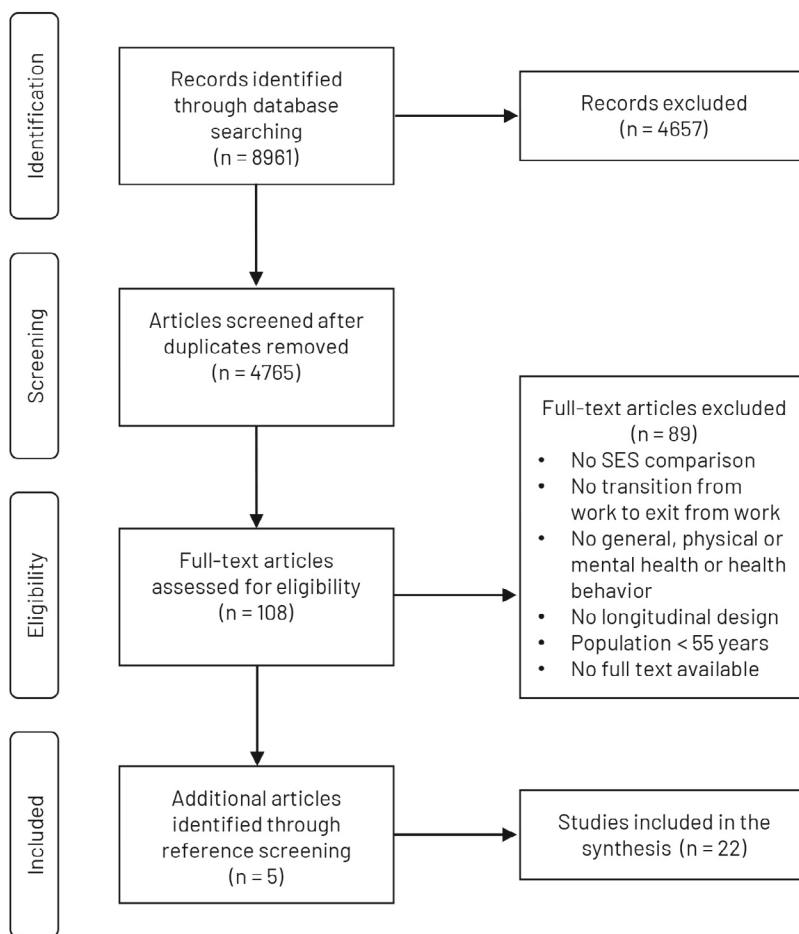


Figure 1. Flow chart

For the assessment of the type of exit route, two studies used register data (42, 43), the other studies relied on self-reports. Early/statutory retirement was measured in 19 studies (15, 17, 27, 28, 31-45, 47, 48) and unemployment and disability pension were both measured in three studies (29, 30, 33, 39, 42, 46). Various measures were used for the assessment of health, i.e. physical health included physical functioning (29, 30, 33, 41-43), chronic morbidity (28), cardiovascular

diseases (44) and sleep disturbances (33); mental health included cognitive development (28), depression (29, 46) and mental functioning (33, 36, 37, 43, 46) and health behaviour included BMI (17, 31, 45), physical activity (27, 34, 35, 48) and alcohol consumption (44). Several indicators for SES were used, i.e. occupational level (12 studies) (17, 27, 28, 31, 33, 37, 40-46, 48), educational level (11 studies) (15, 28, 30, 32, 34-36, 38, 39, 41, 47) and income level (2 studies) (29, 30). Moreover, various operationalizations of these indicators were used. To illustrate, some studies operationalized occupational level as blue and white-collar occupations (31, 41, 45), while another study operationalized occupational level as manual or non-manual occupations (46).

Quality assessment

On average, studies scored 85% on the quality assessment (Table 2). All studies were considered of high quality and three studies even obtained a score of 100% (32, 46, 47). The criterion that scored the lowest was the temporal determination of the work exit. In 15 studies, the temporal determination of the work exit was measured over a period of more than a year (17, 27-31, 33-39, 41-43, 45). The criteria that scored the highest were the description of the source population and statistical model. An extensive version of the quality assessment can be found in the supplementary files.

Table 2. Study characteristics

Author, publication year and country	Population (dataset, cohort or register, n, sex, and age)	Design (type and follow-up period)	Statistical analyses (stratification and/or interaction term)	Quality assessment score
Chung et al., 2009 (A) & Forman-Hoffman et al., 2008 & Gueorguieva et al., 2011 United States (17, 31, 45)	HRS n=2,096-10,565 Male 52-57% Mean age 56.7-60.5 (range 50-71; SD 3.3)	Prospective Follow-up 8-10 years	Stratification; occupational level	89%
Chung et al., 2009 (B) United States (27)	HRS n=11,469 Male 47% Mean age 60.3 (SD 4.8)	Prospective Follow-up 6 years	Stratification; occupational level Interaction term; exit from work with occupational level	78%

Table 2. Study characteristics

Author, publication year and country	Population (dataset, cohort or register, n, sex, and age)	Design (type and follow-up period)	Statistical analyses (stratification and/or interaction term)	Quality assessment score
De Grip et al., 2015 Netherlands (28)	MAAS n=1,360 No data on age and sex	Prospective Follow-up 1993-1995, 1999-2001 and 2005-2007	Interaction term; exit from work with educational level	78%
Gallo et al., 2006 United States (29)	HRS n=3,555 Male 48% Mean age 55.0 (range 51-61)	Prospective Follow-up 6 years	Stratification; income level Interaction term; exit from work with income level	89%
Gallo et al., 2009 United States (30)	HRS n=6,469 Male 52% Mean age 55.0 (SD 2.9)	Prospective Follow-up 6 years	Interaction term; exit from work with educational level and income level	89%
Hessel, 2016 Europe (32)	EU-SILC n=139,683 Male 54% No data on mean age (range 50-74)	Prospective Follow-up 3 years	Stratification; educational level	100%
Jokela et al., 2010 England (33)	Whitehall II study n=7,584 Male 69% No data on mean age (range 54-76)	Prospective Follow-up 15 years	Stratification; occupational level	67%
Kämpfen et al., 2016 United States (34)	HRS n=13,491 Male 43% Mean age 65.3 (range 50-80)	Prospective Follow-up 6 years	Stratification; educational level	89%
Koeneman et al., 2012 Netherlands (35)	LASA n=186 Male 67% Mean age 58.7(SD 2.6)	Prospective Follow-up 1992-1993 and 1995-1996	Interaction term; exit from work with educational level	78%

Table 2. Study characteristics

Author, publication year and country	Population (dataset, cohort or register, n, sex, and age)	Design (type and follow-up period)	Statistical analyses (stratification and/or interaction term)	Quality assessment score
Laaksonen et al., 2012 Finland (46)	National register data of the Finnish Centre for Pensions n=7,005 No data on sex Mean age 53.5 (SD 7.5)	Prospective Follow-up 10 years	Interaction term; exit from work with occupational level	100%
Latif, 2013 Canada (36)	NPHS n=12,947 Male 48% Mean age 65.5 (no data on range and SD)	Prospective Follow-up 18 years	Stratification; educational level	89%
Mein et al., 2003 England (37)	Whitehall II study n=1,010 Male 64% No data on mean age (range 54-59)	Prospective Follow-up 3 years	Stratification; occupational level	67%
Moon et al., 2012 United States (38)	HRS n=5,422 Male 46% Mean age 58.0 (SD 5.7)	Prospective Follow-up 10 years	Stratification; educational level Interaction term; exit from work with educational level	89%
Olesen et al., 2015 Denmark (47)	Register-based Labor Force Statistics and the DREAM n=245,082 Male 51% Mean age 61.8 (range 60-68)	Prospective Follow-up 6 years	Stratification; educational level	100%

Table 2. Study characteristics

Author, publication year and country	Population (dataset, cohort or register, n, sex, and age)	Design (type and follow-up period)	Statistical analyses (stratification and/or interaction term)	Quality assessment score
Rijs et al., 2012 Netherlands (15)	LASA n=506 Male 64% Mean age 58.2 (range 55-64 years)	Prospective Follow-up 1992-1993 and 1995-1996	Stratification; educational level Interaction term; exit from work with educational level	89%
Salm, 2009 United States (39)	HRS n=6,867 Male 40% Mean age 55.5 (SD 5.0)	Prospective Follow-up 8 years	Interaction term; exit from work with educational level	78%
Sjösten et al., 2012 France (48)	GAZEL cohort n=2,711 Male 63% Mean age 58.0 (range 50-66; SD 2.4)	Prospective Follow-up 8 years	Stratification; occupational level Interaction term; exit from work with occupational level	89%
Vahtera et al., 2009 France (40)	GAZEL cohort n=14,714 Male 79% Mean age 55.0 (range 37-63)	Prospective Follow-up 14 years	Stratification; occupational level Interaction term; exit from work with occupational level	89%
Van Zon et al., 2016 United States (41)	HRS n=7,242 Male 49% Mean age 57.0 (SD 3.6)	Prospective Follow-up 20 years	Interaction term; exit from work with occupational level and educational level	89%
Westerlund et al., 2009 France (42)	GAZEL cohort n=14,714 Male 79% Mean age 54.6 (SD 2.9)	Prospective Follow-up 14 years	Stratification; occupational level Interaction term; exit from work with occupational level	78%

Table 2. Study characteristics

Author, publication year and country	Population (dataset, cohort or register, n, sex, and age)	Design (type and follow-up period)	Statistical analyses (stratification and/or interaction term)	Quality assessment score
Westerlund et al., 2010 France (43)	GAZEL cohort n=14,104 Male 80% Mean age 54.8 (SD 2.7)	Prospective Follow-up 14 years	Stratification; occupational level Interaction term; exit from work with occupational level	78%
Zins et al., 2011 France (44)	GAZEL cohort n=12,384 Male 81% Mean age men 55.1(range 50-63; SD 2.0); Mean age women 54.9 (range 50-61; SD 2.4)	Prospective Follow-up 10 years	Stratification; occupational level Interaction term; exit from work with occupational level	78%

Abbreviations; HRS=Health and Retirement Study; GAZEL cohort=French national gas and electricity company cohort; LASA=Longitudinal Aging Study Amsterdam; MAAS=MAastricht Aging Study; ECHP=European Community Household Panel; EU-SIL=European Union Statistics on Income and Living; DREAM=Danish Register for Evaluation of Marginalization; NPHS=Canadian National Population Health Survey

General health

Three studies investigated general health after early/statutory retirement, of which two studies found differences in general health across socioeconomic groups (15, 32). One study described that the probability of obtaining poor general health only decreased among women in higher socioeconomic groups but not among women in lower socioeconomic groups after early/statutory retirement (32). Conversely, one study described that after early/statutory retirement higher socioeconomic groups have a lower probability of obtaining an excellent general health as opposed to lower socioeconomic groups (15). Two studies investigated general health after unemployment or disability pension, but found no differences across socioeconomic groups (39, 41).

Physical health

Seven studies investigated physical health after early/statutory retirement, of which two studies found differences across socioeconomic groups (33, 40).

Studies reported a higher increase in physical health among employees in higher socioeconomic groups as opposed to lower socioeconomic groups (33) and a higher decrease among employees in lower socioeconomic groups as opposed to higher socioeconomic groups after early/statutory retirement (40). One study investigated physical health after unemployment and reported a higher decrease in physical health among employees in lower socioeconomic groups as opposed to higher socioeconomic groups (30). One study investigated physical health after disability pension, but found no differences across socioeconomic groups (33).

Mental health

Six studies investigated mental health after early/statutory retirement, of which three studies found differences across socioeconomic groups (28, 33, 37). One study found that mental health remained equal in lower socioeconomic groups and increased in higher socioeconomic groups after early/statutory retirement (37). Other studies reported that the decrease in mental health was larger in lower socioeconomic groups compared to higher socioeconomic groups (28), or that the increase in mental health was larger in higher socioeconomic groups compared to lower socioeconomic groups (33). One study investigated mental health after unemployment and found that mental health decreased in lower socioeconomic groups and increased in higher socioeconomic groups (29). Two studies investigated mental health after disability pension (33, 46). One study reported that mental health decreased in lower socioeconomic groups and increased in higher socioeconomic groups (46). Conversely, one study reported a decrease in mental health among employees in higher socioeconomic groups compared to no change in lower socioeconomic groups (33).

Health behaviour

Six studies measured health behaviour after early/statutory retirement, of which three studies found differences (17, 27, 31, 34, 45). One study reported an increase in BMI among employees in lower socioeconomic groups compared to no change among employees in higher socioeconomic groups (17, 31, 45). Other studies reported an improvement in physical activity among higher socioeconomic groups, compared to a decrease or no change among lower socioeconomic groups (27, 34).

Table 3. Summary of findings; effects of exit from work on health specified for each health (sub) domain

Health domain	Number of studies (1)	In favor for high socioeconomic groups (2)	In favor for low socioeconomic groups (3)	No differences
General health	4	1	1	2
Physical health	8	3	0	5
• Physical functioning	5	2	-	3
• Chronic morbidity	1	-	-	1
• Cardiovascular disease	1	-	-	1
• Sleep disturbances	1	1	-	-
Mental health	8	5	0	3
• Cognitive development	1	1	-	-
• Depression	2	1	-	1
• Mental functioning	5	3	-	2
Health behaviour	6	3	0	3
• BMI	1	1	-	-
• Physical activity	4	2	-	2
• Alcohol consumption	1	-	-	1

1: Total number of studies is more than 22, as some studies measured multiple health outcomes; 2: Effects of exit from work on health are more in favor for high socioeconomic groups compared to low socioeconomic groups; 3: Effects of exit from work on health are more in favor low socioeconomic groups compared to high socioeconomic groups

Table 4. Data extraction form; exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
General health	Hesselet al., 2016 Europe (32)	Self-reported; early/ statutory retirement	Self-rated health; good or bad	Educational level; primary, secondary, or post-secondary/ tertiary	Probability of bad SRH ↓ in secondary and tertiary educated women and = in primary educated women. In men no differences
	Rijs et al., 2012 Netherlands (15)	Self-reported; early/ statutory retirement	Self-rated health; 3-point scale	Educational level; low, medium, or high	Lower odds of excellent self- perceived health in higher educated compared to lower educated
	Westerlund et al., 2009 France (42)	Register data; company records; early/statutory retirement	Self-rated health; 8-point scale	Occupational level; low, intermediate, or high	No differences
Physical health	Salm, 2009 United States (39)	Self-reported; unemployment	Self-rated health; 5-point scale	Educational level; high school or college degree	No differences
	Westerlund et al., 2009 France (42)	Register data; company records; disability pension	Self-rated health; 8-point scale	Occupational level; low, intermediate, or high	No differences
	Hesselet al., 2016 Europe (32)	Self-reported; early/ statutory retirement	Self-reported chronic morbidity; illness or condition; yes/no Self-reported limited in activities; yes/no	Educational level; primary, secondary, or post-secondary/ tertiary	No differences

Table 4. Data extraction form; exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
	Jokela et al., 2010 England(33)	Self-reported; early/ statutory retirement	Self-reported physical functioning; 10-point scale	Occupational level; low or high	Physical functioning ↑ better in higher occupational levels compared to low occupational levels
	Mein et al., 2003 England(37)	Self-reported; early/ statutory retirement	Self-reported physical functioning; SF-36 physical health subscale	Occupational level; low, medium, or high	No differences
	Moon et al., 2012 United States(38)	Self-reported; early/ statutory retirement	Self-reported or proxy- report of a doctor's diagnosis; risk of cardiovascular disease	Educational level; years of completed education	No differences
	Van Zon et al., 2016 United States(41)	Self-reported; early/ statutory retirement	self-reported functional health; Limitations in mobility functions and limitations in large muscle functions; 5- and 4-point scale	Educational level; less than high school, high-school graduate, some college, or college and above Occupational level; blue or white collar	No differences
	Vahtera et al., 2009 France(40)	Self-reported; early/ statutory retirement	Self-reported sleep disturbances during past 12 months; yes/no	Occupational level; low, intermediate, or high	Sleep disturbances ↓ more in higher occupational levels compared to lower occupational levels

Table 4. Data extraction form; exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
	Westerlund et al., 2010 France (43)	Self-reported; early/ statutory retirement	Self-reported physical fatigue; physically tiredness; 8-point scale	Occupational level; low, intermediate, or high	No differences
	Gallo et al., 2009 United States (30)	Self-reported; unemployment	Self-reported physical disability; physical functioning; 14-point scale	Educational level; low, medium, or high Income level; pre- tax labor earning, dichotomized on \$25,000	Physical functioning ↓ less in higher income levels compared to lower income levels
Mental health	Jokela et al., 2010 England (33)	Self-reported; disability pension	Self-reported physical functioning; 10-point scale	Occupational level; low or high	No differences
	De Grip et al., 2015 Netherlands (28)	Self-reported; early/ statutory retirement	Neuropsychological tests; cognitive development; immediate recall, delayed verbal memory, cognitive flexibility, and information processing speed	Educational level; low or high	Information processing speed ↓ faster in lower educated compared to higher educated workers
	Jokela et al., 2010 England (33)	Self-reported; early/ statutory retirement	Self-reported mental functioning; SF-36 mental health subscale; 5 items	Occupational level; low or high	Mental functioning ↑ better in higher occupational levels compared to lower occupational levels

Table 4. Data extraction form: exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
	Latif, 2013 Canada (36)	Self-reported; early/ statutory retirement	Self-reported mental functioning; 9-point CIDI- SF scale	Educational level; less than secondary, secondary graduate, post-secondary, or college/university	No differences
	Mein et al., 2003 England (37)	Self-reported; early/ statutory retirement	Self-reported mental functioning; SF-36 mental health subscale	Occupational level; low, medium, or high	Mental health ↑ in medium and high occupational levels and = in low occupational level
	Olesen et al., 2015 Denmark (47)	Self-reported; early/ statutory retirement	Register data; Danish central psychiatric research register; Depression; hospital treatment for depression and antidepressant medication	Educational level; public school, craftsman or higher	No differences
	Westerlund et al., 2010 France (43)	Self-reported; early/ statutory retirement	Self-reported mental fatigue; mentally tiredness; 8-point scale	Occupational level; low, intermediate, or high	No differences
	Gallo et al., 2006 United States (29)	Self-reported; unemployment	Self-reported depressive symptoms; 8-point CES-D scale	Income level; net worth household non-housing asset, dichotomized on \$38,000	Depressive symptoms ↑ in lower income levels and ↓ in higher income levels

Table 4. Data extraction form; exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
Health	Jokela et al., 2010 England (33)	Self-reported; disability pension	Self-reported mental functioning; SF-36 mental health subscale; 5 items	Occupational level; low or high	Mental functioning ↓ in higher occupational levels and = in lower occupational levels
	Laaksonen et al., 2012 Finland (46)	Self-reported; disability pension	Register data; Social Insurance Institution of Finland's register; purchases of psychotropic drugs; Mental functioning	Occupational level; manual or non-manual	Mental health ↓ in manual occupational levels and ↑ in non-manual occupational levels
Health behaviour	Chung et al., 2009 (A) & Forman-Hoffman et al., 2008 & Gueorguieva et al., 2011 United States (17, 31, 45)	Self-reported; early/statutory retirement	Self-reported weight and height (BMI)	Occupational level; physically demanding/blue collar or sedentary/white collar occupations	BMI ↑ in physically demanding/blue collar occupations and = in sedentary/white collar occupations
	Chung et al., 2009 (B) United States (27)	Self-reported; early/statutory retirement	Self-reported physical activity; participation in vigorous physical activity or exercise 3 times a week; yes/no	Occupational level; physically demanding or sedentary jobs	Physical activity ↑ in sedentary jobs and ↓ in physically demanding jobs

Table 4. Data extraction form; exit route, health, SES, and the relationship between these variables

Health	Study	Exit route	Health	SES	Results
	Kämpfen et al., 2016 United States (34)	Self-reported; early/statutory retirement	Self-reported physical activity; intensity and frequency; compliance with the physical activity guideline for Americans	Educational level; low medium or high	Physical activity ↑ in higher educational levels and = in lower educational levels
	Koeneman et al., 2012 Netherlands (35)	Self-reported; early/statutory retirement	Self-reported physical activity; moderate to vigorous physical activity and sports participation	Educational level; low or high	No differences
	Sjösten et al., 2012 France (48)	Self-reported; early/statutory retirement	Self-reported physical activity; walking distance and leisure-time sport and weight	Occupational level; low, intermediate, or high	No differences
	Zins et al., 2011 France (44)	Self-reported; early/statutory retirement	Self-reported alcohol consumption; heavy alcohol consumers ≥ 28 drinks per week	Occupational level; manual workers, intermediate, clerical or managers	No differences

Symbols: = equal; ↓ decreases; ↑ increases; Studies were classified per health outcome and subsequently per type of exit route. As a result, studies may be more than one time present in this table

Discussion

Key findings

The results indicated that improvements in health after exit from work were mainly present in employees with a high SES as opposed to employees with a low SES. However, these effects vary across health domains. In the category general and physical health, the study results implied that there are possibly no differences between socioeconomic groups. For mental health and health behaviour, the study results implied that exit from work was associated with a (larger) decrease or smaller increase of health among people with a low SES as opposed to people with a high SES. In addition, these differences between high and low socioeconomic groups were mainly found after early/statutory retirement and not after unemployment or disability pension.

Interpretation

The differences in effects of exit from work on health across socioeconomic groups can be explained by the life course ecological model that is meant to understand socioeconomic inequalities in health (5, 10, 49). According to this model, contextual factors such as SES play a role in exit from work (10, 50). For example, workers in higher socioeconomic groups may possess greater resources (e.g. better financial situation or better living conditions) to manage the work exit, which may in turn result in a better health after exit from work (51, 52). Conversely, employees in lower socioeconomic groups may possess fewer resources, which will more rapidly result in health declines after exit from work (51, 52).

In the domain of mental health, positive effects of exit from work on health for higher socioeconomic groups were mainly found in depression and mental functioning. Higher socioeconomic groups are more often exposed to mental work demands and work-related stress during their working life (53). These work stressors could reduce after exit from work. Therefore, the more positive effects of exit from work on mental health for higher socioeconomic groups could be explained by greater declines in mental demands after exit from work. Moreover, exit from work for lower socioeconomic groups could more often result in a reduced income, which could be worrying (54) and may result in a decline of mental health. Conversely, exit from work for higher socioeconomic groups may be less worrying due to better financial resources, which in turn may result in an increase of mental health (51, 52).

In the domain of health behaviour, the main finding was that improvements in physical activity and a decrease in BMI after exit from work were perceived more often in higher than in lower socioeconomic groups. In line with these results, research indicated that the type of previous work can influence the effects of exit

from work on physical activity (7). Among employees with physically demanding jobs, the loss of physical activity at work after exit from work was not compensated by leisure-time physical activity, because such compensation would require huge lifestyle adaptations (55, 56). This will likely result in an increased BMI, if no modifications are made in their eating patterns (53). Moreover, employees with a high SES often perceive time as a barrier for leisure-time physical activity during their working life (57). After exit from work, this barrier can dissolve as people with a high SES can more actively engage in leisure-time physical activity and thereby their BMI may decrease more than among people with a low SES.

Methodological considerations

A strength of this review is the inclusion of studies with a longitudinal study design, which enabled the investigation of health changes after exit from work across socioeconomic groups. Nevertheless, this is the first review investigating the effects of exit from work on health across socioeconomic groups and identified some important methodological considerations for future research. First, some studies using the same dataset were evaluated separately. Still, some overlap could exist between these studies and therefore, findings may have been multiplied to some extent. Though, many aspects, i.e. study population, type of exit route, health outcome or SES indicator, varied between the studies using the same dataset, making it unlikely that findings are multiplied.

Second, the positive effects of exit from work among higher socioeconomic groups were mainly found after early/statutory retirement. Unfortunately, in the present review, we did not have sufficient studies to investigate the influence of unemployment or disability pension on health across socioeconomic groups. From previous literature, we know that the type of exit route plays a role in the course of health (7, 33). Hence, more research is needed to gain insight into the effects of unemployment or disability pension on health across socioeconomic groups.

Third, all studies obtained a high score in the quality assessment. Still, the quality assessment did highlight a limitation. Many studies did not specify the exact timing of the work exit. The lack of specified information on the exact timing of this transition makes it difficult to relate changes in health to the transition itself. All studies measured health prior to exit from work to control for health at baseline, as health on itself can impact exit from work (i.e. endogeneity) (58). However, if the transition was measured over a period of a few years, health changes could either occur before the transition or as a consequence of the work exit. Thus, it remains unknown whether the change in health is caused by the work exit itself or whether the change in health already started before exit from work (58).

Fourth, for health outcomes highly heterogeneous measures were used and were evaluated together (e.g. sleep disturbances or physical functioning). We realize that separate analyses with more homogeneous outcomes are preferred, but given the small number of studies available at this moment, this is the best available option at this stage. Consequently, there is a scarcity of studies on each health outcome wherein it remains difficult to reach a firm conclusion on this topic. Therefore, more research is needed on the effects of exit from work on health across socioeconomic groups. Fifth, various operationalizations were used for SES. No single definition of SES exists, and most studies only considered one indicator of SES. Research has shown that the combination of multiple indicators will likely result in better understanding of how SES influences the relation between exit from work and health (59). Future research should therefore focus on the operationalization of SES in the effects of exit from work on health.

2

Implications

Resulting from the findings of this review that were mentioned above, some implications for researchers and policy makers were derived. From our results, it is shown that already existing health inequalities between people with a low and high SES appear to remain existent or widen as people leave the workforce. Moreover, people with a low SES generally have a lower health status throughout their life course. Therefore, the promotion of health after exit from work among people with a low SES requires more attention than among people with a high SES. This points to the importance of implementing public health policies addressing health inequalities (after exit from work), specifically focusing on the health promotion of people with a low SES. Second, some possible explanations for differences between high and low socioeconomic groups have been described above. However, additional research is needed to further explore the underlying mechanisms of SES in the relation between exit from work and health. This could help policymakers to improve health after exit from work or to develop health promotion programs focusing on people with a low SES. Improving health of lower socioeconomic groups after exit from work could result in fewer older adults in need of care which could lower the societal and healthcare costs of our ageing population (60). Third, future research should, 1) specify the exact timing of the work exit, 2) investigate the influence of unemployment or disability pension on health across socioeconomic groups and 3) obtain greater consistency in SES indicators.

Conclusions

This review indicated that the effects of exit from work, or more specific the effects of early/statutory retirement on health are different between high and low socioeconomic groups. Evidence suggests that exit from work has more positive effects on mental health and health behaviour among higher socioeconomic groups and more negative effects among lower socioeconomic groups. Public policies should focus on increasing the health status of lower socioeconomic groups as this could reduce health inequalities after exit from work.

References

1. Harbers M. Old-age dependency ratio, trends and projections in selected countries, 1950-2050. RIVM; 2008.
2. Vaupel JW. Biodemography of human ageing. *Nature*. 2010;464(7288):536-42.
3. Helming W, Martins C, Scuvée B. The EU in the world - 2016 edition. Eurostat; 2016.
4. Cooke M. Policy changes and the labour force participation of older workers: evidence from six countries. *Canadian Journal on Aging*. 2006;25(4):387-400.
5. Kim JE, Moen P. Retirement transitions, gender, and psychological well-being: A life-course, ecological model. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2002;57(3):P212-P22.
6. Van der Heide I, van Rijn RM, Robroek SJ, Burdorf A, Proper KI. Is retirement good for your health? A systematic review of longitudinal studies. *BMC Public Health*. 2013;13:1180.
7. Zantinge EM, van den Berg M, Smit HA, Picavet HS. Retirement and a healthy lifestyle: opportunity or pitfall? A narrative review of the literature. *The European Journal of Public Health*. 2013;24(3):433-9.
8. Leijten FR, de Wind A, van den Heuvel SG, Ybema JF, van der Beek AJ, Robroek SJ, et al. The influence of chronic health problems and work-related factors on loss of paid employment among older workers. *Journal of Epidemiology and Community Health*. 2015;69(11):1058-65.
9. Shultz KS, Morton KR, Weckerle JR. The influence of push and pull factors on voluntary and involuntary early retirees' retirement decision and adjustment. *Journal of Vocational Behavior*. 1998;53:45-57.
10. Wang M, Shultz KS. Employee retirement: A review and recommendations for future investigation. *Journal of Management*. 2010;36(1):172-206.
11. Platts LG, Webb E, Zins M, Goldberg M, Netuveli G. Mid-life occupational grade and quality of life following retirement: a 16-year follow-up of the French GAZEL study. *Aging & Mental Health*. 2015;19(7):634-46.
12. Schuring M, Robroek SJ, Lingsma HF, Burdorf A. Educational differences in trajectories of self-rated health before, during, and after entering or leaving paid employment in the European workforce. *Scandinavian Journal of Work, Environment & Health*. 2015;41(5):441-50.
13. Mackenbach JP, Kunst AE. Measuring the magnitude of socio-economic inequalities in health: an overview of available measures illustrated with two examples from Europe. *Social Science & Medicine*. 1997;44(6):757-71.
14. Shavers VL. Measurement of socioeconomic status in health disparities research. *Journal of the National Medical Association*. 2007;99(9):1013-23.
15. Rijs KJ, Cozijnsen R, Deeg DJ. The effect of retirement and age at retirement on self-perceived health after three years of follow-up in Dutch 55-64-year-olds. *Ageing & Society*. 2012;32(2):281-306.
16. Berchick ER, Gallo WT, Maralani V, Kasl SV. Inequality and the association between involuntary job loss and depressive symptoms. *Social Science & Medicine*. 2012;75(10):1891-4.
17. Chung S, Domino ME, Stearns SC. The effect of retirement on weight. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2009;64(5):656-65.
18. Denton FT, Spencer BG. What is retirement? A review and assessment of alternative concepts and measures. *Canadian Journal on Aging*. 2009;28(1):63-76.

19. Bongaarts J. Population and Development Review. Pensions at a Glance 2015: OECD and G20 Indicators Paris: OECD Publishing; 2016;42(2):383-4.
20. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *Journal of Health and Social Behavior*. 1997;38(1):21-37.
21. Wallace RB, Herzog AR. Overview of the health measures in the Health and Retirement Study. *Journal of Human Resources*. 1995;30:S84-S107.
22. World Health Organization. Mental health: a state of well-being 2014-2017. [Available from: http://www.who.int/features/factfiles/mental_health/en/].
23. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. WHO; 2013.
24. Hayden JA, Côté P, Bombardier C. Evaluation of the quality of prognosis studies in systematic reviews. *Annals of Internal Medicine*. 2006;144(6):427-37.
25. Hoogendoorn WE, van Poppel MN, Bongers PM, Koes BW, Bouter LM. Systematic review of psychosocial factors at work and private life as risk factors for back pain. *Spine*. 2000;25(16):2114-25.
26. National Institutes of Health. Quality assessment tool for observational cohort and cross-sectional studies. NIH ; 2014 [Available from: www.nhlbi.nih.gov/health-pro/guidelines/in-develop/cardiovascular-risk-reduction/tools/cohort].
27. Chung S, Domino ME, Stearns SC, Popkin BM. Retirement and physical activity: analyses by occupation and wealth. *American Journal of Preventive Medicine*. 2009;36(5):422-8.
28. De Grip A, Dupuy A, Jolles J, van Boxtel M. Retirement and cognitive development in the Netherlands: Are the retired really inactive? *Economics & Human Biology*. 2015;19:157-69.
29. Gallo WT, Bradley EH, Dubin JA, Jones RN, Falba TA, Teng H-M, et al. The persistence of depressive symptoms in older workers who experience involuntary job loss: results from the health and retirement survey. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2006;61(4):S221-S8.
30. Gallo WT, Brand JE, Teng H-M, Leo-Summers L, Byers AL. Differential impact of involuntary job loss on physical disability among older workers: Does predisposition matter? *Research on Aging*. 2009;31(3):345-60.
31. Gueorguieva R, Sindelar JL, Wu R, Gallo WT. Differential changes in body mass index after retirement by occupation: hierarchical models. *International Journal of Public Health*. 2011;56(1):111-6.
32. Hessel P. Does retirement (really) lead to worse health among European men and women across all educational levels? *Social Science & Medicine*. 2016;151:19-26.
33. Jokela M, Ferrie JE, Gimeno D, Chandola T, Shipley MJ, Head J, et al. From midlife to early old age: health trajectories associated with retirement. *Epidemiology*. 2010;21(3):284-90.
34. Kämpfen F, Maurer J. Time to burn (calories)? The impact of retirement on physical activity among mature Americans. *Journal of Health Economics*. 2016;45:91-102.
35. Koeneman MA, Chinapaw MJ, Verheijden MW, van Tilburg TG, Visser M, Deeg DJ, et al. Do major life events influence physical activity among older adults: the Longitudinal Aging Study Amsterdam. *International Journal of Behavioral Nutrition and Physical Activity*. 2012;9(1):147.
36. Latif E. The impact of retirement on mental health in Canada. *The Journal of Mental Health Policy and Economics*. 2013;16(1):35-46.
37. Mein G, Martikainen P, Hemingway H, Stansfeld S, Marmot M. Is retirement good or bad for mental and physical health functioning? Whitehall II longitudinal study of civil servants. *Journal of Epidemiology & Community Health*. 2003;57(1):46-9.

38. Moon JR, Glymour MM, Subramanian S, Avendaño M, Kawachi I. Transition to retirement and risk of cardiovascular disease: Prospective analysis of the US health and retirement study. *Social Science & Medicine*. 2012;75(3):526-30.
39. Salm M. Does job loss cause ill health? *Health Economics*. 2009;18(9):1075-89.
40. Vahtera J, Westerlund H, Hall M, Sjösten N, Kivimäki M, Salo P, et al. Effect of retirement on sleep disturbances: the GAZEL prospective cohort study. *Sleep*. 2009;32(11):1459-66.
41. Van Zon SK, Bültmann U, Reijneveld SA, de Leon CF. Functional health decline before and after retirement: A longitudinal analysis of the Health and Retirement Study. *Social Science & Medicine*. 2016;170:26-34.
42. Westerlund H, Kivimäki M, Singh-Manoux A, Melchior M, Ferrie JE, Pentti J, et al. Self-rated health before and after retirement in France (GAZEL): a cohort study. *The Lancet*. 2009;374(9705):1889-96.
43. Westerlund H, Vahtera J, Ferrie JE, Singh-Manoux A, Pentti J, Melchior M, et al. Effect of retirement on major chronic conditions and fatigue: French GAZEL occupational cohort study. *BMJ*. 2010;341:c6149.
44. Zins M, Guéguen A, Kivimäki M, Singh-Manoux A, Leclerc A, Vahtera J, et al. Effect of retirement on alcohol consumption: longitudinal evidence from the French GAZEL cohort study. *PLoS One*. 2011;6(10):e26531.
45. Forman-Hoffman VL, Richardson KK, Yankey JW, Hillis SL, Wallace RB, Wolinsky FD. Retirement and weight changes among men and women in the health and retirement study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2008;63(3):S146-S53.
46. Laaksonen M, Metsä-Simola N, Martikainen P, Pietiläinen O, Rahkonen O, Gould R, et al. Trajectories of mental health before and after old-age and disability retirement: a register-based study on purchases of psychotropic drugs. *Scandinavian Journal of Work, Environment & Health*. 2012;38(5):409-17.
47. Olesen K, Rod NH, Madsen IE, Bonde JP, Rugulies R. Does retirement reduce the risk of mental disorders? A national registry-linkage study of treatment for mental disorders before and after retirement of 245 082 Danish residents. *Occupational and Environmental Medicine*. 2015;72(5):366-72.
48. Sjösten N, Kivimäki M, Singh-Manoux A, Ferrie JE, Goldberg M, Zins M, et al. Change in physical activity and weight in relation to retirement: the French GAZEL Cohort Study. *BMJ Open*. 2012;2(1):e000522.
49. Corna LM. A life course perspective on socioeconomic inequalities in health: A critical review of conceptual frameworks. *Advances in Life Course Research*. 2013;18(2):150-9.
50. Wang M. Profiling retirees in the retirement transition and adjustment process: examining the longitudinal change patterns of retirees' psychological well-being. *Journal of Applied Psychology*. 2007;92(2):455.
51. Donaldson T, Earl JK, Muratore AM. Extending the integrated model of retirement adjustment: Incorporating mastery and retirement planning. *Journal of Vocational Behavior*. 2010;77(2):279-89.
52. Drożdżak Z, Turek K. Retirement and perceived social inferiority strongly link with health inequalities in older age: decomposition of a concentration index of poor health based on Polish cross-sectional data. *International Journal for Equity in Health*. 2016;15:21.
53. Wheaton B. Life transitions, role histories, and mental health. *American Sociological Review*. 1990;55(2):209-23.

54. Mein G, Higgs P, Ferrie J, Stansfeld S. Paradigms of retirement: The importance of health and ageing in the Whitehall II study. *Social Science & Medicine*. 1998;47(4):535-45.
55. Nooyens AC, Visscher TL, Schuit AJ, van Rossum CT, Verschuren WM, van Mechelen W, et al. Effects of retirement on lifestyle in relation to changes in weight and waist circumference in Dutch men: a prospective study. *Public Health Nutrition*. 2005;8(8):1266-74.
56. Slingerland AS, van Lenthe FJ, Jukema JW, Kamphuis CB, Looman C, Giskes K, et al. Aging, retirement, and changes in physical activity: prospective cohort findings from the GLOBE study. *American Journal of Epidemiology*. 2007;165(12):1356-63.
57. Welch N, McNaughton SA, Hunter W, Hume C, Crawford D. Is the perception of time pressure a barrier to healthy eating and physical activity among women? *Public Health Nutrition*. 2009;12(7):888-95.
58. Horner EM, Cullen MR. The impact of retirement on health: quasi-experimental methods using administrative data. *BMC Health Services Research*. 2016;16:68.
59. Adler NE, Boyce T, Chesney MA, Cohen S, Folkman S, Kahn RL, et al. Socioeconomic status and health: The challenge of the gradient. *American Psychologist*. 1994;49(1):15-24.
60. Rechel B, Grundy E, Robine J-M, Cylus J, Mackenbach JP, Knai C, et al. Ageing in the European Union. *The Lancet*. 2013;381(9874):1312-22.

Supplementary files

Supplementary file 1. Quality assessment

Study	1	2	3	4	5	6	7	8	9	Score
Chung et al., 2009a, Forman-Hoffman et al., 2008 & Gueorgieva et al., 2011(17, 31, 45)	+	+	+	+	+	-	+	+	+	89%
Chung et al., 2009b(27)	+	-	+	+	+	-	+	+	+	78%
De Grip et al., 2015 (28)	+	+	+	+	-	-	+	+	+	78%
Gallo et al., 2006(29)	+	+	+	+	+	-	+	+	+	89%
Gallo et al., 2009(30)	+	+	+	+	+	-	+	+	+	89%
Hessel, 2016(32)	+	+	n.a.	n.a.	n.a.	+	+	+	+	100%
Jokela et al., 2010(33)	+	+	-	+	+	-	+	+	-	67%
Kämpfen and Maurer, 2016(34)	+	+	+	+	+	-	+	+	+	89%
Koeneman et al., 2012 (35)	+	+	+	+	+	-	+	-	+	78%
Laaksonen et al., 2012 (46)	+	+	n.a.	n.a.	n.a.	+	+	+	+	100%
Latif, 2013(36)	+	+	+	+	+	-	+	+	+	89%
Mein et al., 2003(37)	+	+	-	+	-	-	+	+	+	67%
Moon et al., 2012(38)	+	+	+	+	+	-	+	+	+	89%
Olesen et al., 2015(47)	+	+	n.a.	n.a.	n.a.	+	+	+	+	100%
Rijs et al., 2012(15)	+	+	+	+	+	+	+	-	+	89%
Salm, 2009(39)	+	-	+	+	+	-	+	+	+	78%

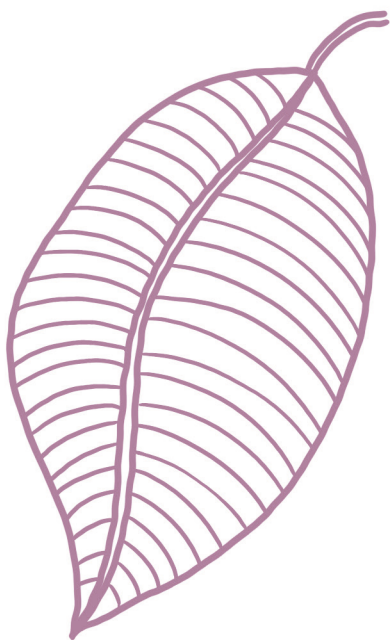
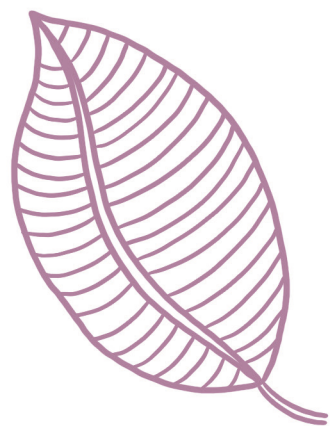
Study	1	2	3	4	5	6	7	8	9	Score
Sjösten et al., 2012 (48)	+	+	-	+	+	+	+	+	+	89%
Vahtera et al., 2009 (40)	+	+	-	+	+	+	+	+	+	89%
Van Zon et al., 2016 (41)	+	+	+	+	+	-	+	+	+	89%
Westerlund et al., 2009 (42)	+	+	-	+	+	-	+	+	+	78%
Westerlund et al., 2010 (43)	+	+	-	+	+	-	+	+	+	78%
Zins et al., 2011 (44)	+	+	-	+	+	+	+	+	-	78%

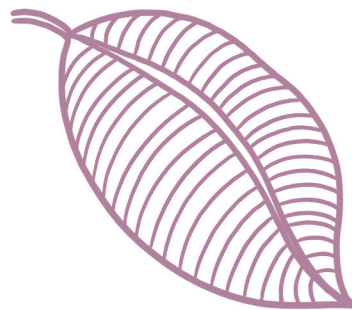
A: rating of criteria: + = positive; - = negative; n.a. = not applicable;

Criteria: 1=Adequate description of source population (i.e. clear in- and exclusion criteria); 2=Adequate description of sampling frame, recruitment methods, period and place of recruitment; 3=Participation rate at baseline at least 80% or non-response not selective (i.e. selected population does not significantly differ in key characteristics from source population); 4=Provision of the response rate (n or %) during follow-up measurements; 5=Response at follow-up at least 80% of the n at baseline or non-response during follow-up measurements not selective (i.e. follow-up population does not significantly differ in key characteristics from selected population); 6= Temporal determination of the work exit; 7=Statistical model used appropriate and described with point estimates and measures of precision (i.e. CI or SE); 8=Population size suitable for answering the research question; 9=Important confounders or effect modifiers (i.e. age, sex) identified and adjusted for (i.e. stratification and/or interaction term)

Part II

**The role of occupational health professionals
in supporting lower socioeconomic position
workers with problems on multiple life domains**





Chapter 3

Improving the health of workers with a low socioeconomic position: Intervention Mapping as a useful method for adaptation of the Participatory Approach

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Abstract

Background: Workers with a low socioeconomic position (SEP) have a higher risk for health problems and premature dropout from the workforce. Unfavorable working conditions and unhealthy behaviors are more prevalent among this group of workers. The Participatory Approach (PA) is an evidence-based method to identify and solve problems at the workplace related to health issues of the worker. Health problems among workers with a low SEP are usually caused by an interplay of problems in and outside the workplace. To solve health problems on multiple life domains for workers with a low SEP we aim to adapt this approach to a broader perspective.

Methods: An Intervention Mapping (IM) protocol was used to adapt the PA. First, a needs assessment was conducted combining literature with data from interviews and focus groups with workers with a low SEP, employers, and occupational health professionals (OHPs). Based on the needs assessment a program goal and performance and change objectives were defined, which resulted in methods and practical strategies to solve problems on multiple life domains. Based on the results of these steps, the PA was adapted, and an implementation and evaluation plan were developed.

Results: The needs assessment confirmed that an interplay of problems on multiple life domains affect work functioning and health of workers with a low SEP. Moreover, they perceived difficulties with solving problems or used passive or avoidant coping styles towards these problems. The program goal is to identify and solve problems on multiple life domains that affect healthy functioning at work. To achieve this, workers need support from OHPs to solve problems. The PA protocol and materials were adapted using theoretical concepts of the Self-Determination Theory (SDT), which resulted in the Grip on Health intervention. For OHPs a training was developed on how to implement this intervention in practice. The intervention will be evaluated in a pilot implementation study among workers with a low SEP and other relevant stakeholders.

Conclusions: IM was a valuable tool for the adaptation of the PA to better support workers with a low SEP to improve their work functioning and health from a broader perspective.

Keywords: Intervention Mapping; Low socioeconomic position; Occupational health professional; Participatory Approach; Positive Health approach; Work functioning; Workers; Workplace intervention.

Background

Socioeconomic health inequalities are a major societal problem. Workers with a low socioeconomic position (SEP) have a higher risk for health deterioration and premature mortality (1–3). Therefore, morbidity and mortality rates are generally higher than among workers with a high SEP (4, 5). Workers with a low SEP may also be more prone to health problems, because unfavorable physical and psychosocial working conditions and unhealthy behaviors are more prevalent among this group of workers (6, 7). Unfavorable working conditions and unhealthy behaviors are linked to poor health outcomes, which increases the risk for a disability and premature dropout from the labor market (8–10). Hence, workers with a low SEP are more likely to be unemployed or stop working due to a disability, as compared to workers with a high SEP. Furthermore, dropout from work is likely to lead to further deterioration of health (11). To prevent work disability among workers with a low SEP it is important to improve work functioning and health of workers with a low SEP which can be achieved by a workplace intervention.

In the past decades there has been a growing awareness for interventions at the workplace that aim to solve health risks at the workplace through involvement of relevant stakeholders. One of these interventions is the Participatory Approach (PA). The effectiveness of the PA has been extensively investigated and these studies have shown that the PA had a positive impact on physical and mental health outcomes and return to work (RTW) (12, 13). The PA consists of a stepwise process to identify and solve problems at the workplace in a participatory way (14). This process is guided by an independent occupational health professional (OHP), wherein equivalent and active input of the worker, supervisor and other relevant stakeholders at the workplace is required and together they reach consensus on the most important problems and solutions (15). Stakeholder involvement may lead to a higher acceptance and implementation of solutions (16, 17). Moreover, participation of stakeholders may also lead to a better adherence to solutions, which increases the chance that solutions are sustained over time (13). Gradually the PA has been increasingly implemented in occupational health practice. Herein, the PA originally had an organizational preventive approach and was later on adapted to an individual (RTW) approach (15, 18).

Although the PA is a promising method to reduce health risks at the workplace, this approach solely focuses on problems at the workplace and does not take into account that problems outside the workplace may also interfere with work functioning and health. Workers with a low SEP often face problems on multiple life domains (19), e.g. next to musculoskeletal problems experienced at the workplace, they could also have psychosocial problems or poor housing conditions. According to the new concept of health 'The Positive Health approach' the lack of ability to

adapt and self-manage physical, emotional, and social challenges of life could all be considered as health problems (20). In this approach health is more than the absence of disease, as one's health status can be determined by multiple life domains. So, to improve work functioning and health of workers with a low SEP more effectively, the PA might extend its focus to identify and solve problems both in and outside the workplace. Therefore, the aim of this study is to adapt the PA to improve work functioning and health of workers with a low SEP from a broader perspective.

Methods

This paper describes the process of adaptation of the PA (Fig. 1), guided by the six steps of an Intervention Mapping (IM) protocol for development, implementation and evaluation of theory and evidence-based health promotion interventions (21). IM is not rigid, it is an iterative process which makes it possible to move back and forth between steps, and each step is based on previous steps. Moreover, IM stimulates involvement of stakeholders during the entire process to tailor interventions to the needs and wishes of these stakeholders. The Medical Ethics Review Committee of the VU University Medical Center approved the study protocol and confirmed that the Medical Research Involving Human Subjects Act does not apply to this study. All participants signed informed consent before participation.

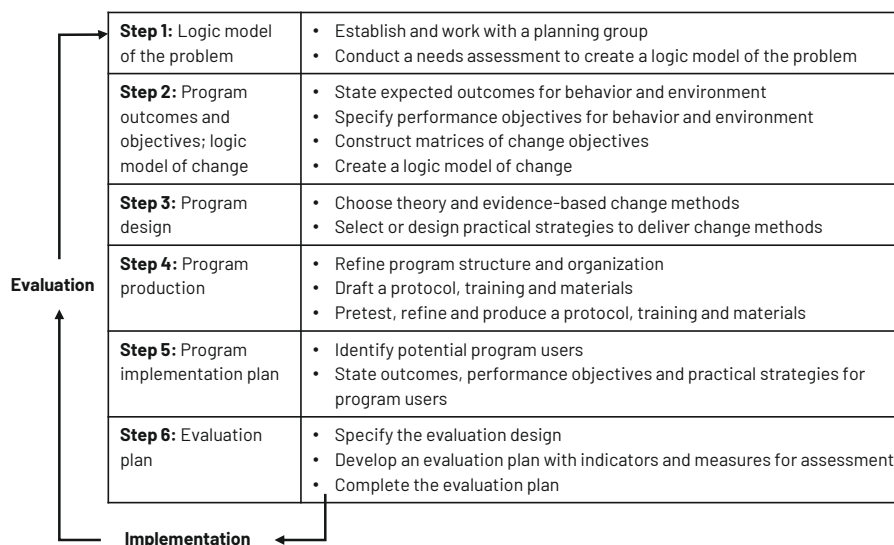


Figure 1. The six steps of Intervention Mapping adapted from Eldredge et al. 2016 (21)

Step 1: logic model of the problem

In the first step, a planning group was established for the whole IM process. Next, a needs assessment was conducted which combined evidence from literature with data from six semi-structured interviews with workers with a low SEP working in a steel factory and from two focus groups with OHPs (i.e. 2 occupational health experts, 1 occupational physician, 1 employability coach and 1 occupational social worker) and employers (i.e. 1 health and safety manager and 6 human resource managers). Themes that were discussed in the interviews and focus groups were: 1) the need for discussing problems on multiple life domains, 2) the content of the different steps of the PA, 3) the involvement of relevant stakeholders in and outside the workplace, 4) what type of solutions and in what way solutions can be implemented, 5) the need for a preventive intervention, 6) in what way workers with a low SEP can be reached, and 7) important preconditions for the implementation of the intervention in occupational health practice. In supplementary file 1, interview guides can be found for the interviews and focus groups. Interviews and focus groups were audio-recorded and transcribed verbatim. Thereafter, the transcripts were summarized and combined with evidence from literature. The needs assessment provided insight into work functioning and health problems of workers with a low SEP and behaviors and underlying determinants that may cause these problems. Furthermore, the needs assessment provided insight into environmental factors and the underlying determinants for these factors that may also cause work functioning and health problems among workers with a low SEP. This resulted in a logic model of the problem. Based on this model a program goal was formulated to improve work functioning and health of workers with a low SEP from a broader perspective.

Step 2: program outcomes and objectives – logic model of change

In the second step, behavioral and environmental outcomes were developed to achieve the program goal. Behavioral and environmental outcomes were derived from the behaviors and environmental factors that were described in the logic model of the problem. For each of these outcomes, performance objectives were specified, which describe in detail what needs to be done to accomplish the behavioral or environmental outcomes. This resulted in a logic model of change. Thereafter, theoretical concepts were selected to change the performance objectives. Theoretical concepts were based on the behavioral and environmental determinants. Next, matrices of change objectives were constructed; for each behavioral and environmental performance objective strategies linked to theoretical concepts were formulated, to describe what needs to be done to accomplish the performance objectives.

Step 3 & 4: program design and program production

In the third step, the design of the PA with a broader perspective on health was developed consisting of theory and evidence-based change methods to influence the change objectives for the behavioral and environmental outcomes in step 2. Next, practical strategies were identified to deliver the change methods. In the fourth step, the program structure and organization of the PA with a broader perspective were described in an intervention program, training, and materials. All gathered information from the previous steps was synthesized and translated to adapt the PA.

Step 5 & 6: program implementation and evaluation plan

In the fifth step, a plan for the implementation of the adapted PA was developed. In the implementation plan potential users of the PA were specified. Next, program outcomes, performance objectives and practical strategies were developed for the users to enable optimal delivery. In the sixth and final step of the IM process, an evaluation design was chosen and a plan for the evaluation of the PA was developed to investigate the implementation of the adapted PA in practice.

Results

Step 1: logic model of the problem

Planning group

The planning group consisted of 3 health scientists (RS, AB, CB), 2 occupational health physicians (FS, JA) and 1 ergonomist (MH). This multidisciplinary planning group was established to adapt the PA for workers with a low SEP. Furthermore, throughout the IM process relevant stakeholders at the workplace were consulted, namely workers with a low SEP, OHPs and employers.

Needs assessment

Health problems among workers with a low SEP

Literature on the perception of health among workers with a low SEP showed that health has been described as a multidimensional concept (22, 23). This is in line with the 'Positive Health approach', which defines health as the ability to adapt and self-manage, in the light of physical, emotional, and social challenges of life (20). In this approach health is a dynamic phenomenon that should be seen as an integral part of life, rather than something that is only considered when illness occurs. Research shows that this concept is highly appreciated, as it addresses people as more than just their illness, and people themselves can decide what is important to them (24). According to this concept, health consists of multiple domains (e.g. bodily and mental functions, social and societal participation) and these domains were also recognized by workers with a low SEP (23).

Workers with a low SEP often face problems on multiple life domains (19), which could interfere with work functioning and health. In the interviews, workers with a low SEP recognized that not only health complaints are related to problems at work, but that problems in other life domains also interfere. Workers with a low SEP also mentioned that problems at work are often caused by underlying problems in other life domains that are not always identified by OHPs. OHPs and employers acknowledged in the focus groups that problems outside the workplace are relevant to discuss in occupational health practice and are often not identified. The time and energy that workers need for problems outside the workplace could negatively affect their work functioning (19). Moreover, short term social or economic problems may hinder workers with a low SEP to improve their health on the longer term (19, 25). For example, adherence to lifestyle interventions is often only feasible when short term problems in daily life are resolved (26, 27).

Main determinants for health problems among workers with a low SEP

Workers with a low SEP have a larger risk for health problems for three different reasons. First, unfavorable work-related determinants, including both physical and psychosocial factors. Physical factors prevalent among workers with a low SEP are biomechanical, chemical, and biological exposures which increases the risk for physical health problems (6, 28, 29). Workers with a low SEP also often have jobs that include repetitive work, heavy lifting and with poorer working arrangements, such as shift work (6, 30). Psychosocial factors prevalent among workers with a low SEP are low job control, high job insecurity and low levels of social support (6, 28, 29, 31), which may result in a lower psychological wellbeing and an increased risk for mental health problems (32).

Second, unfavorable non-work-related determinants are more prevalent among workers with a low SEP. Workers with a low SEP more often have unhealthy lifestyle behaviors, such as smoking, physical inactivity, heavy drinking, and unhealthy dietary patterns (19, 28, 33). In addition, workers with a low SEP generally have limited financial resources, and these limited resources could hinder them to live healthy (25, 33). Healthy behaviors are often more costly than unhealthy behaviors. For example, healthy food is often more expensive than unhealthy food (34). Moreover, workers with a low SEP have more limited social networks than people with a higher SEP (23). Social networks can provide resources, such as support or knowledge in enabling healthy behaviors (33). Access to resources through social networks refers to the concept of 'Social Capital' (35). Moreover, social capital may also be a work-related determinant, consisting of support from for example, the supervisor. People with a low SEP generally have lower levels of social capital which limits their access to obtain and use diverse resources (36). This may lead to poorer health outcomes among people with a low SEP, as compared to people with a high SEP (35–37). Hence, increasing social capital could

be more important among workers with a low SEP than among workers with a high SEP, and the workplace could provide an opportunity to increase this.

Work and non-work-related determinants may also result in work-family conflicts, wherein family demands (i.e. non-work-related determinants) interfere with work life, and vice versa. Unfavorable work-related determinants such as shift work or less flexible work could negatively affect the family life (38). Inversely, unfavorable non-work-related determinants, such as an unhealthy lifestyle could negatively affect the working life (39). Work-family conflicts are associated with a higher sickness absence (40, 41) and poorer health outcomes (41, 42). Especially among workers with a low SEP, work-family conflicts seem to have a more negative effect on health, compared to workers with a high SEP (43). Hence, workers with a low SEP are simultaneously exposed to a variety of unfavorable determinants (6, 44). Interventions that focus only on work-related determinants ignore the interconnections between these determinants and are less likely to be effective (44).

Third, poor health literacy to adapt these work and non-work-related determinants. Workers with a low SEP tend to have poor health literacy, which means that they have less cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways that promote and maintain good health (33, 45). As a result, workers with a low SEP may find it difficult to self-manage and adapt unfavorable circumstances in or outside the workplace, which could be caused by a lack of motivation or self-efficacy for their ability to adapt unfavorable circumstances (46). Moreover, poor health literacy could also result from a lack of awareness and a lower risk perception of health problems. Workers with a low SEP hardly think about their own sustainable employability (19), which was also recognized in the interviews. Workers with a low SEP mentioned that it was difficult to be aware of a problem and to act on it. Especially when they were able to work, they may not recognize the value or importance of changing unfavorable determinants for work functioning and health. Poor health literacy may lead to passive or avoidant coping styles towards health problems. Research shows that people with a higher SEP show a more active attitude towards their health status, whereas people with a low SEP focus more on acceptance instead of facing the challenges (22). This could also be enhanced by the more difficult circumstances workers with a low SEP may face due to problems on multiple life domains. It may be harder for workers with a low SEP to act on these circumstances, making it easier to accept them. As a result, workers with a low SEP may be too late in addressing health problems, which could increase the risk for premature dropout from the labor market (47).

Only improving the ability of workers with a low SEP to self-manage and adapt health problems is not enough, this group of workers also need a supportive environment on how to perform the desired behavior. For example, a study among truck drivers showed that those who were motivated to change their lifestyle did not succeed, as they didn't know how to overcome the obstacles in their work and private life (48). For that reason, workers with a low SEP need support in tackling these problems, such as making an action plan, that includes information on how and when the behavior can be performed and thinking about strategies on how to overcome potential obstacles (49). Moreover, workers with a low SEP also need a supportive environment as they have a lower control (i.e. autonomy) over decisions in and outside the workplace. Workers with a low SEP have, compared to workers with a high SEP, a lower decision latitude which is a predictor for health problems at the workplace (6). Outside the workplace workers with a low SEP experience a lower control over decisions in their day-to-day lives, due to a lack of resources needed for health and wellbeing (25, 50). Finally, supportive environments are associated with a decrease in work-family conflicts and an increase in social capital (35, 51, 52). This could be relevant for workers with a low SEP, as they experience more negative health effects of work-family conflicts and have lower levels of social capital (36, 43). So, to effectively self-manage and adapt problems on multiple life domains, relevant stakeholders (e.g. supervisor or partner) need to be involved in the decision-making process of solving problems. OHPs could play an important role in this process by bringing together the worker and relevant stakeholders.

A supportive environment can consist of an OHP who supports the worker in solving problems on multiple life domains. However, occupational health practice is mainly focused on healthy functioning at the workplace (53). As a result, OHPs may insufficiently consider problems on other life domains than work or may lack competencies on how to support workers with a low SEP in solving problems on other life domains than work. Therefore, occupational health care should provide more attention to the interplay of problems in and outside the workplace and how this could affect work functioning and health of workers with a low SEP. Furthermore, preventive interventions wherein OHPs provide early support to workers with a low SEP could be difficult. OHPs are not always easily reached in organizations; they could be seen as someone who works for the employer (i.e. lack of trust) and workers could be unfamiliar with the preventive role of OHPs (54). Finally, as was mentioned above, workers with a low SEP have a lower awareness and risk perception of health problems. As a result, workers with a low SEP do not easily ask for help from an OHP. For that reason, OHPs need to create a safe environment for workers with a low SEP and improve their familiarity among workers at the workplace.

Logic model of the problem

To improve the health of workers with a low SEP from a broader perspective the PA should focus on identifying both work and non-work-related health problems, and also consider the interplay between these problems. Therefore, the program goal of the PA is to solve problems on multiple life domains that affect work functioning. This could result in healthy functioning at the workplace, sustainable employability, and the prevention of work disability among workers with a low SEP. To achieve this, the logic model of the problem (Fig. 2) describes behavioral and environmental determinants that need to be considered in the PA. Behavioral determinants for workers with a low SEP are motivation, self-efficacy, awareness, risk perception and control for solving health problems on multiple life domains. Environmental determinants are competencies (knowledge and skills) for OHPs to support workers with a low SEP in solving health problems with relevant stakeholders, trust, and familiarity of OHPs among workers with a low SEP and more attention for healthy functioning outside the workplace in occupational health care.

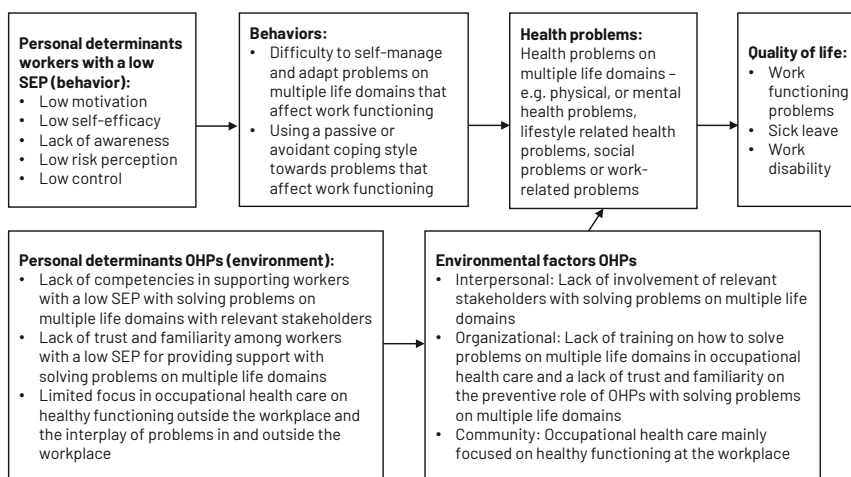


Figure 2: Logic model of the problem

Step 2: Logic model of change

Performance objectives

The behavioral outcome related to goal of the PA is that workers with a low SEP are able to actively solve problems on multiple life domains that affect healthy functioning at work. The performance objectives associated with the behavioral outcome of workers with a low SEP are listed in Table 1. OHPs are the environmental agents at the workplace who can support workers with a low SEP. The environmental outcome related to the goal of the PA is that OHPs support

workers with a low SEP in actively solving problems on multiple life domains that affect healthy functioning at work. The performance objectives associated with the environmental outcome are listed in Table 2. In supplementary file 2, the logic model of change can be found, which summarizes the behavioral and environmental determinants, performance objectives and outcomes.

Table 1. Performance objectives for the behavioral outcome

1. Identify problems in and/or outside the workplace that affect healthy functioning at work and select relevant stakeholders
2. Actively prioritize problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders
3. Actively identify and find consensus on solutions for problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders
4. Implement solutions for problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders

Table 2. Performance objectives for the environmental outcome

1. Discuss with the worker problems in and/or outside the workplace that affect healthy functioning at work and select relevant stakeholders
2. Guide the worker and relevant stakeholder with actively prioritizing problems in and/or outside the workplace that affect healthy functioning at work
3. Guide the worker and relevant stakeholder with actively identifying and finding consensus on solutions for problems in and/or outside the workplace that affect healthy functioning at work
4. Support the worker with the implementation of solutions for problems in and/or outside the workplace that affect healthy functioning at work

Selection of theoretical concepts and change objectives

To enable workers with a low SEP to actively identify, prioritize and solve problems in and/or outside the workplace the theoretical concepts of the Self- Determination Theory (SDT) were selected; autonomy, competence, and relatedness. This theory argues that by increasing autonomy, competence and relatedness health related behaviors are more likely to be initiated and maintained (i.e. motivation)(55), and thereby may also positively influence the attitude of workers with a low SEP towards solving health problems (i.e. awareness and risk perception)(56). The behavioral determinants control and self-efficacy described in the logic model of the problem match well with the determinant’s autonomy and competence. Furthermore, the key elements of the PA; involvement of relevant stakeholders and a consensus-based process match well with the determinant’s autonomy and

relatedness. In supplementary file 3, matrices of change objectives can be found for the behavioral outcome to identify what workers with a low SEP may need to learn or change to achieve the performance objectives. For the environmental agents the theoretical concepts competence and attitude were selected. For OHPs to support workers with a low SEP, it is important that they feel competent, create a safe environment, and have a positive attitude towards solving problems both in and outside the workplace. In supplementary file 4, matrices of change objectives can be found for the environmental outcome to identify what OHPs need to learn or change to achieve the performance objectives.

Step 3: program design

Theory and evidence-based change methods and practical strategies were formulated in Tables 3 and 4 for the selected determinants of the behavioral and environmental outcome. The already existing protocol of the PA was used as a starting point for the delivery of practical strategies. This PA protocol exists of different steps that are considered logical and provide a structured way of understanding what problems and solutions are considered most relevant (58). In applying the PA, a process leader is essential. OHPs are suitable for this role as they have communication skills, are independent, confidential and are used to guide workers with work-related problems. Furthermore, in the already existing protocol of the PA, the supervisor is often a relevant stakeholder for problems that are identified at the workplace (14). The worker and supervisor can together decide on the most important problems and solutions, which will give a higher chance of solutions being implemented at the workplace. If problems are identified outside the workplace relevant stakeholders can vary, for example spouse, family members, friends or (health) professionals (e.g. general practitioner or job coach from the municipality). They can provide another perspective on the most important problems and solutions or can provide support in the implementation of solutions outside the workplace. The PA protocol, training and material need to be adapted to fit the goal of discussing and solving health problems both in and outside the workplace that may affect work functioning, and are presented in step 4: program production.

Table 3. Theoretical methods and practical strategies for selected determinants of the behavioral outcome

Determinant	Theory	Parameters	Practical strategies
Autonomy	Choice	Provide opportunities for choice	The worker and relevant stakeholder are both involved in the decision making of the most relevant problems and solutions in and/or outside the workplace
	Acknowledge feelings	Recognize perspectives of others	The OHP acknowledges the perspectives of the worker and relevant stakeholders on problems and solutions in and/or outside the workplace
	Personal responsibility	Identify values of behaviors and align with central values in life	Discuss consequences of problems and benefits of solving problems and choose solutions that could fit into the workplace and/or life outside the workplace
Competence	Social cognitive theory; self-efficacy (58)	Increase feelings of mastery	Find consensus on solutions, set specific solutions, break down solutions into smaller steps that are feasible to implement and compose action plans
		Involve relevant stakeholders	Problems and solutions are discussed with relevant stakeholders to assess different perspectives on the most relevant problems and solutions
		Provide feedback and evaluation	Find consensus on solutions and make an action plan that is feasible to implement and evaluate the implementation of the action plan
		Improve coping mechanisms	Reflect on potential barriers for the implementation of solutions and develop a plan to cope with these barriers

Table 3. Theoretical methods and practical strategies for selected determinants of the behavioral outcome

Determinant	Theory	Parameters	Practical strategies
Relatedness	Social support	Support from OHP	The OHP provides tools to the worker to identify and prioritize problems and solutions in and/or outside the workplace
		Support from relevant stakeholders	Relevant stakeholders participate in the process of identifying and prioritizing problems in and/or outside the workplace and finding solutions
	Equality	Guidance by an independent person	OHP acknowledges all perspectives, remains impartial and generate consensus between the worker and the stakeholder
		A supportive environment to share problems and solutions	Being open and respectful to other perspectives on problems and solutions and OHP assures an equal involvement in the discussion
Safety	A safe environment to share problems	OHP is confidential with the discussed problems and problems will only be discussed with other stakeholders if the worker agrees	

Table 4. Theoretical methods and practical strategies for selected determinants of the environmental outcome

Determinant	Theory	Parameters	Practical strategies
Competence	Guided practice	Instruction and skills training	OHP receives a training on how to apply the PA with a broadened perspective and practice this in role plays
Attitude	Verbal persuasion	Providing arguments	Provide information on the Positive Health approach and why it is important to solve problems on multiple life domains with relevant stakeholders

Step 4: program production

The existing protocol and material of the PA were adapted to match the broadened perspective of the PA (see Table 5). This resulted in an intervention that was named “Grip on Health”. The original PA materials were considered too complex (i.e. focus is put on the cognitive skills) for workers with a low SEP and too time consuming, also for the OHP (59). As a result, there was a need to develop materials with more

visual aspects that were less time consuming. In collaboration with a designer new material was developed that was tailored to the needs and wishes of workers with a low SEP and OHPs. The new material was pretested through interviews and focus groups among workers with a low SEP, OHPs and employers. Workers with a low SEP, as well as OHPs and employers, were positive towards the new material, considered the material useful to discuss problems in and outside the workplace and found that the material provided a structured way to identify problems and solutions. Pretesting the material also provided input for improvements in the material and practical requirements for working with the material in occupational health practice.

Table 5. The protocol of the Grip on Health intervention

Steps	Content
Step 1: Inventory	The process leader and worker discuss potential problems on multiple life domains
Step 2: Research	The process leader and worker prioritize problems that affect healthy functioning at work and discuss the causes and consequences of these problems
Step 3: Summary	The process leader and worker select the most relevant problems and decide which stakeholder is relevant to involve. The process leader invites the stakeholder and asks to think about problems for the worker
Step 4: Problem analysis	The process leader, worker and relevant stakeholder discuss the problems from their own perspective and reach consensus on the most relevant problems that affect healthy functioning at work
Step 5: Brainstorm	The process leader, worker, and relevant stakeholder brainstorm about possible solutions
Step 6: Solution analysis	The process leader, worker and relevant stakeholder reach consensus on solutions
Step 7: Action plan	The process leader, worker and relevant stakeholder compose an action plan to implement solutions
Step 8: Evaluation	The process leader and worker evaluate the action plan. If necessary, an additional evaluation will be planned.

The training for OHPs was also adapted into a training for the Grip on Health intervention. The training will provide OHPs with information on 1) the variety of health problems among workers with a low SEP, 2) the Positive Health approach, 3) the PA and its key elements, 3) how to apply the Grip on Health intervention in practice, 4) how to act as a process leader and 5) how and when to involve relevant stakeholders in and outside the workplace. Information on the Grip on

Health intervention will be alternated with role plays, giving OHPs the opportunity to practice certain steps of the intervention with the material and their role as process leader. The training will be given by two members of the planning group. At the end of the training, participating OHPs will receive a practical manual on how to apply the Grip on Health intervention, a presentation of the training and the materials of the intervention. Moreover, OHPs get a practical assignment, wherein they are asked to apply the intervention in occupational health practice among 3-5 workers with a low SEP. OHPs are advised to complete the steps of the intervention within 3 to 4 different conversations within a time frame of 3 months. A couple of months after the training a follow up meeting will be planned in which OHPs will share their experiences with the practical assignment, reflect on the different steps of the intervention and on their role as process leader.

Step 5: implementation plan

The experiences with the Grip on Health intervention in occupational health practice will be assessed in a pilot implementation study. We will invite approximately 20 OHPs for the Grip on Health training, and we will ask them to apply the intervention in their occupational health practice. Two important requirements were identified in the interviews and focus groups for optimal delivery of the intervention by the OHP. First, a confidential and safe environment are important preconditions for discussing problems at the workplace. OHPs that will be invited for the training need to have full confidentiality as problems from other life domains may also be discussed. In the Dutch context, OHPs need to be either physicians or nurses, or professionals who work under legal supervision of an occupational health physician. Furthermore, the OHP must also create a safe environment, as workers with a low SEP mentioned in the interviews that certain problems are difficult to discuss (e.g. problems outside the workplace) when they are not feeling safe. Second, the intervention cannot be applied in all situations or to all kinds of health problems. In the protocol of the PA, it is stated that the PA is not suitable for a worker with a juridical conflict at work with for example the supervisor or for workers with serious medical conditions - e.g. severe mental disorders (14). Moreover, OHPs and employers mentioned in the focus groups that not every non-work-related problem can be solved. In the PA (e.g. financial problems) and that it may sometimes be better to refer a worker to a (health) professional from outside the workplace.

The trained OHPs will apply the intervention in an organization among workers with a low SEP. Therefore, the employers of the organization in which OHPs will apply the intervention are a relevant stakeholder for optimal delivery of the intervention. The employers need to allow and support the implementation of the Grip on Health intervention in their organization. As the needs assessment showed that workers with a low SEP do not easily ask for help from an OHP, employers and supervisors

also need to make their workers with a low SEP aware of this intervention by referring a worker to an OHP when they notice health problems or problems that affect work functioning. Performance objectives for these environmental agents to enable implementation are listed in Table 6. To achieve these performance objectives, the OHP needs to provide employers with information and make them aware of the added value of the Grip on Health intervention. Employers will receive information from the planning group about the intervention and the OHP is asked to discuss with the employer how and when the intervention can be implemented.

Table 6. Performance objectives for employers

1.	Employers are informed about the implementation of the Grip on Health intervention in their organization
2.	Employers are convinced of the added value of the Grip on Health intervention in their organization
3.	Employers approve that OHPs implement the Grip on Health intervention in their organization
4.	Employers facilitate time and sufficient resources for OHPs to implement the Grip on Health intervention in their organization
5.	Employers refer a worker to an OHP when they notice health problems or problems that affect work functioning.

Step 6: evaluation plan

To evaluate the pilot implementation of the Grip on Health intervention in occupational health practice we will use the Medical Research Council process evaluation framework (60). In this framework the key components of a process evaluation are: measuring implementation (i.e. what is implemented and how?), mechanism of impact (how does the delivered intervention produce change?) and context (i.e. how does context affect implementation and outcomes). Implementation of interventions at the workplace may be difficult as it is dependent on how occupational health care is organized in an organization and on a variety of stakeholders, such as employers and supervisors. This in turn, emphasizes the need for conducting a more comprehensive process evaluation of the Grip on Health intervention with different methods (i.e. both qualitative and quantitative) and from different levels (i.e. workers with a low SEP, OHPs and other relevant stakeholders). The process of the implementation will be assessed by measuring the following aspects: 1) reach, 2) recruitment, 3) fidelity, 4) dose delivered, 5) dose received and 6) quality of delivery. The mechanisms of impact will be assessed by measuring 1) participant responsiveness (i.e. perceived satisfaction, effectiveness, and relevance), and 2) perceived differentiation (i.e. essential components of the intervention). The context will be assessed by measuring the facilitators and barriers related to the implementation of the

intervention in occupational health practice. First, a process evaluation will be conducted, because this information is essential to determine how, for whom and under what conditions the intervention will be feasible and applicable. Thereafter, we will use this information to decide whether and how we should conduct an effect-evaluation in occupational health practice. A randomized controlled trial is an appropriate method for an effect-evaluation (61) if this is considered feasible within occupational health practice (62).

Discussion

This study describes how the PA was adapted to improve work functioning and health of workers with a low SEP from a broader perspective. Adaptation of the PA was guided by the IM protocol, which resulted in the Grip on Health intervention. In this intervention OHPs support workers with a low SEP in actively solving problems on multiple life domains that affect work functioning and thereby health. The intervention consists of a stepwise protocol to identify, prioritize, and solve problems in and/or outside the workplace with the involvement of at least one relevant stakeholder. The OHP is considered the optimal professional to execute this intervention in daily practice as he or she already has an independent and confidential role in occupational health care.

Previous studies that used the IM protocol for the development of a PA intervention at the workplace focused on RTW (63, 64). These studies based their intervention on the Attitude Social influence Self-efficacy (ASE) model, as workers' attitude, social influence and self-efficacy were identified as determinants for RTW. In this study the SDT was used as the needs assessment showed that workers with a low SEP may lack motivation to actively solve health problems, and according to this theory workers' autonomy, competence and relatedness may increase their motivation for health-related behaviors (55). This is important as workers with a low SEP use avoidant and/or passive coping styles towards health problems, which could increase the risk of further health deterioration and eventually the chance for premature dropout from the labor market. The concepts of the SDT, which are autonomy, competence, and relatedness, are an essential part of the Grip on Health intervention and match well with the behavioral determinants self-efficacy and control that were described in the logic model of the problem. Moreover, participation of workers in the intervention could also increase the behavioral determinants awareness and risk perception towards health problems, which in turn may also improve the motivation of workers with a low SEP to solve these problems (65).

Implementation of the PA with a broadened perspective is beneficial for occupational health practice, as there is still too little awareness that aspects in

multiple life domains may influence work functioning and it is therefore essential to take these into account to prevent work disability. This broadened perspective is also more in line with the Positive Health approach. In this approach, first a person evaluates each health domain for him or her selves, wherein the health status on each of these domains becomes visible. Then, a health professional asks the person what he or she wants to change to provide guidance in solving those problems that are really important to the person (24). In that way, the Positive Health approach focuses on a person's own responsibility, participation, and self-management, which is also apparent in their definition of health: "Health as the ability to adapt and self-manage, in the light of physical, emotional and social challenges of life" (20). However, one of the main points of criticism of the Positive Health approach is that not all people are equipped to manage problems themselves, especially people with a low SEP. For individuals with problems on multiple life domains an intervention wherein (health) professionals, social networks and organizations are involved is necessary to improve their health status (25). The Grip on Health intervention tackles this point of criticism, as in the PA the OHP not only asks the worker what problems he or she wants to change but also involves relevant stakeholders and supports the worker in solving these problems.

Methodological considerations

IM was a valuable tool to adapt the PA to the needs of the target group, workers with a low SEP. However, this is not a guarantee that the intervention will be successful. There are still some methodological considerations of the intervention itself. First, workers with a low SEP may be hard to reach for OHPs. The needs assessment showed that OHPs have a lack of trust and familiarity among workers with a low SEP. Therefore, OHPs are not easily approached or accessible as a health professional who can support them in solving health problems both in and outside the workplace. Furthermore, workers visit primarily a general practitioner when they are experiencing health problems outside the workplace. Integrating occupational and general health care might be a strategy to reach more workers in occupational health care (66). For example, general practitioners could take into account work-related problems, be more aware of the importance of work as a contributory factor of health and if needed refer a worker to an OHP.

Second, it may also be challenging to involve relevant stakeholders from outside the workplace in an intervention that is facilitated and financed by the workplace. Stakeholders from outside the workplace could be the partner or family member of the worker, but also another health professional. However, including other health professionals for a face-to-face discussion with the worker and the OHP may be too difficult to organize in practice, but will depend per situation. For example, in the Netherlands occupational health care is strictly separated from

regular health care, which could make it harder to include health professionals from outside the workplace. In this study only stakeholders from the workplace were invited to participate in the focus groups, as their needs on how to adapt the PA were considered most relevant to consider for an intervention that will be implemented at the workplace. Nevertheless, adding views of professionals from outside the workplace on how to involve them in the intervention, could further improve the implementation of the intervention. Whether it is actually feasible in practice to involve stakeholders from outside the workplace needs to be further investigated.

Third, OHPs may also experience time as a barrier to implement the intervention in occupational health practice. Following the steps of the PA is a very time-consuming process (58, 67). Nevertheless, the elaborated process of the PA gives OHPs the opportunity to get a complete overview of the worker and gain the workers' trust in their guidance (58). Gain the workers trust was mentioned as an important factor in this study for discussing health problems, especially for problems from outside the workplace. In this study different OHPs, which may vary in their possibilities to implement the Grip on Health intervention, will be trained to implement the intervention. Thereby, the pilot implementation study can provide more information on which type of OHPs would be most suitable for the implementation of this intervention, how much time is needed for the implementation of the intervention and whether implementation of this intervention is feasible.

Conclusion

IM was a valuable tool for adaption of the PA to workers with a low SEP to improve their work functioning and health from a broader perspective. The IM provided information on which adaptations were needed to solve problems on multiple life domains that affect healthy functioning at work. This resulted in the Grip on Health intervention that is specifically tailored to workers with a low SEP and considers the interconnection between work and non-work-related determinants for work functioning and health. This intervention will be evaluated in a pilot implementation study to further explore whether and how this intervention fits in occupational health practice.

References

1. Mackenbach JP, Stirbu I, Roskam A-JR, Schaap MM, Menvielle G, Leinsalu M, et al. Socioeconomic inequalities in health in 22 European countries. *New England Journal of Medicine*. 2008;358(23):2468–81.
2. Stringhini S, Carmeli C, Jokela M, Avendaño M, Muennig P, Guida F, et al. Socioeconomic status and the 25 × 25 risk factors as determinants of premature mortality: a multicohort study and meta-analysis of 1·7 million men and women. *Lancet*. 2017;389(10075):1229–37.
3. Hu Y, van Lenthe FJ, Borsboom GJ, Looman CW, Bopp M, Burström B, et al. Trends in socioeconomic inequalities in self-assessed health in 17 European countries between 1990 and 2010. *Journal of Epidemiology and Community Health*. 2016; 70(7):644–52.
4. Kunst AE, Leon DA, Groenhouf F, Mackenbach JP. Occupational class and cause specific mortality in middle aged men in 11 European countries: comparison of population based studiesCommentary: unequal inequalities across Europe. *BMJ*. 1998;316(7145):1636–42.
5. Mackenbach JP, Kunst AE, Cavelaars AE, Groenhouf F, Geurts JJ. EU working group on socio-economic inequalities in health socio-economic inequalities in morbidity and mortality in western Europe. *Lancet*. 1997;349(7):1655–9.
6. Niedhammer I, Chastang J-F, David S, Kelleher C. The contribution of occupational factors to social inequalities in health: findings from the national French SUMER survey. *Social Science & Medicine*. 2008;67(11):1870–81.
7. Laaksonen M, Roos E, Rahkonen O, Martikainen P, Lahelma E. Influence of material and behavioural factors on occupational class differences in health. *Journal of Epidemiology and Community Health*. 2005;59(2):163–9.
8. Polvinen A, Gould R, Lahelma E, Martikainen P. Socioeconomic differences in disability retirement in Finland: the contribution of ill-health, health behaviours and working conditions. *Scandinavian Journal of Public Health*. 2013;41(5):470–8.
9. Robroek SJ, Rongen A, Arts CH, Otten FW, Burdorf A, Schuring M. Educational inequalities in exit from paid employment among Dutch workers: the influence of health, lifestyle, and work. *PLoS One*. 2015;10(8): e0134867.
10. Schuring M, Robroek SJ, Otten FW, Arts CH, Burdorf A. The effect of ill health and socioeconomic status on labor force exit and re-employment: a prospective study with ten years follow-up in the Netherlands. *Scandinavian Journal of Work, Environment & Health*. 2013;39(2):134–43.
11. Dooley D, Fielding J, Levi L. Health and unemployment. *Annual Review of Public Health* 1996;17:449–65.
12. Rivillis I, Van Eerd D, Cullen K, Cole DC, Irvin E, Tyson J, et al. Effectiveness of participatory ergonomic interventions on health outcomes: a systematic review. *Applied Ergonomics*. 2008;39(3):342–58.
13. Tsutsumi A, Nagami M, Yoshikawa T, Kogi K, Kawakami N. Participatory intervention for workplace improvements on mental health and job performance among blue-collar workers: a cluster randomized controlled trial. *Journal of Occupational and Environmental Medicine*. 2009;51(5):554–63.
14. Huysmans MA, Schaafsma FG, Viester L, Anema JR. Multidisciplinaire Leidraad Participatieve Aanpak op de Werkplek – Hoofddocument en achtergronddocument. VU Medisch Centrum: EMGO Instituut voor onderzoek naar Gezondheid en Zorg; 2016.
15. Loisel P, Anema JR. Handbook of work disability. Prevention and Management. New York: Springer; 2013.

16. Driessen MT, Groenewoud K, Proper KI, Anema JR, Bongers PM, van der Beek AJ. What are possible barriers and facilitators to implementation of a participatory ergonomics programme? *Implementation Science*. 2010;5:64.
17. Wilson JR. Solution ownership in participative work redesign: the case of a crane control room. *International Journal of Industrial Ergonomics*. 1995;15(5):329–44.
18. Anema JR, Steenstra IA, Urlings IJ, Bongers PM, De Vroome EM, Van Mechelen W. Participatory ergonomics as a return-to-work intervention: a future challenge? *American Journal of Industrial Medicine*. 2003;44(3):273–81.
19. Burdorf A, Robroek SJ, Schuring M. Kennissynthese Werk (en) is Gezond. ZonMw; 2016.
20. Huber M, Knottnerus JA, Green L, van der Horst H, Jadad AR, Kromhout D, et al. How should we define health? *BMJ*. 2011;343:d4163.
21. Eldredge LKB, Markham CM, Ruiters RAC, Fernández ME, Kok G, Parcel GS. Planning health promotion programs: an intervention mapping approach. San Francisco: Jossey-Bass Inc; 2016.
22. Stronks K, Hoeymans N, Haverkamp B, den Hertog FR, van Bon-Martens MJ, Galenkamp H, et al. Do conceptualisations of health differ across social strata? A concept mapping study among lay people. *BMJ Open*. 2018;8(4):e020210.
23. Flinterman F, Bisscheroux P, Dijkema P, den Hertog F, de Jong M, Vermeer A, et al. Positieve gezondheid en gezondheidspercepties van mensen met een lage SES. *Tijdschrift voor gezondheidswetenschappen*. 2019;97(3–4):96–105.
24. Huber M, van Vliet M, Giezenberg M, Winkens B, Heerkens Y, Dagnelie PC, et al. Towards a 'patient-centred' operationalisation of the new dynamic concept of health: a mixed methods study. *BMJ Open*. 2016;6(1):e010091.
25. Berg J, Harting J, Stronks K. Individualisation in public health: reflections from life narratives in a disadvantaged neighbourhood. *Critical Public Health*. 2012;31(1):101–12.
26. Dumas A, Robitaille J, Jette SL. Lifestyle as a choice of necessity: young women, health and obesity. *Social Theory & Health*. 2014;12(2):138–58.
27. Coupe N, Cotterill S, Peters S. Tailoring lifestyle interventions to low socio-economic populations: a qualitative study. *BMC Public Health*. 2018;18:967.
28. Borg V, Kristensen TS. Social class and self-rated health: can the gradient be explained by differences in life style or work environment? *Social Science & Medicine*. 2000;51(7):1019–30.
29. Kaikkonen R, Rahkonen O, Lallukka T, Lahelma E. Physical and psychosocial working conditions as explanations for occupational class inequalities in self-rated health. *European Journal of Public Health*. 2009;19(5):458–63.
30. Åkerstedt T. Shift work and disturbed sleep/wakefulness. *Occupational Medicine*. 2003; 53(2):89–94.
31. Rahkonen O, Laaksonen M, Martikainen P, Roos E, Lahelma E. Job control, job demands, or social class? The impact of working conditions on the relation between social class and health. *Journal of Epidemiology and Community Health*. 2006;60(1):50–4.
32. Stansfeld SA, Head J, Marmot MG. Explaining social class differences in depression and well-being. *Social Psychiatry and Psychiatric Epidemiology*. 1998;33(1):1–9.
33. André S, Kraaykamp G, Meuleman R. Een (on) gezonde leefstijl: opleiding als scheidslijn. Sociaal en Cultureel Planbureau (SCP); 2018.
34. Waterlander WE, de Haas WE, van Amstel I, Schuit AJ, Twisk JW, Visser M, et al. Energy density, energy costs and income—how are they related? *Public Health Nutrition*. 2010;13(10):1599–608.

35. Moore S, Kawachi I. Twenty years of social capital and health research: a glossary. *Journal of Epidemiology and Community Health*. 2017;71(5):513–7.
36. Uphoff EP, Pickett KE, Cabieses B, Small N, Wright J. A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities. *International Journal for Equity in Health*. 2013;12:54.
37. Oksanen T, Kouvonen A, Kivimäki M, Pentti J, Virtanen M, Linna A, et al. Social capital at work as a predictor of employee health: multilevel evidence from work units in Finland. *Social Science & Medicine*. 2008;66(3):637–49.
38. Jacobsen DI, Fjeldbraaten EM. Shift work and sickness absence—the mediating roles of work–home conflict and perceived health. *Human Resource Management Journal*. 2018;57(5):1145–57.
39. Oellingrath IM, De Bortoli MM, Svendsen MV, Fell AK. Lifestyle and work ability in a general working population in Norway: a cross-sectional study. *BMJ Open*. 2019;9(4):e026215.
40. Nilsen W, Skipstein A, Ostby KA, Mykletun A. Examination of the double burden hypothesis—a systematic review of work–family conflict and sickness absence. *European Journal of Public Health*. 2017;27(3):465–71.
41. Hämmig O, Bauer GF. Work, work–life conflict and health in an industrial work environment. *Occupational Medicine*. 2014;64(1):34–8.
42. Neto M, Chambel MJ, Carvalho VS. Work–family life conflict and mental wellbeing. *Occupational Medicine*. 2018;68(6):364–9.
43. Hämmig O. Prevalence and health correlates of work–life conflict among blue- and white-collar workers from different economic sectors. *Frontiers in Public Health*. 2014;2:221.
44. Carmichael F, Fenton S–J, Pinilla Roncancio M, Sing M, Sadhra S. Workplace wellbeing programmes and their impact on employees and their employing organisations: a scoping review of the evidence base. *Work, Wealth and Wellbeing Research Group and Network, The University of Birmingham*; 2014.
45. World Health Organization. Health promotion glossary; 1998. [Available from: <https://www.who.int/healthpromotion/about/HPR%20Glossary%201998.pdf?ua=1>].
46. Ryan RM, Patrick H, Deci EL, Williams GC. Facilitating health behaviour change and its maintenance: interventions based on self-determination theory. *European Health Psychologist*. 2008;10(1):2–5.
47. De Wit M, Wind H, Hulshof CTJ, Frings-Dresen MH. Person-related factors associated with work participation in employees with health problems: a systematic review. *International Archives of Occupational and Environmental Health*. 2018;91(5):497–512.
48. Boeijinga A, Hoeken H, Sanders J. An analysis of health promotion materials for Dutch truck drivers: off target and too complex? *Work*. 2017;56(4):539–49.
49. Schwarzer R. Modeling health behavior change: how to predict and modify the adoption and maintenance of health behaviors. *Journal of Applied Psychology*. 2008; 57(1):1–29.
50. Whitehead M, Pennington A, Orton L, Nayak S, Petticrew M, Sowden A, et al. How could differences in ‘control over destiny’ lead to socio-economic inequalities in health? A synthesis of theories and pathways in the living environment. *Health Place*. 2016;39:51–61.
51. Griggs TL, Casper WJ, Eby LT. Work, family and community support as predictors of work–family conflict: a study of low-income workers. *Journal of Vocational Behavior*. 2013;82(1):59–68.

52. Muse LA, Pichler S. A comparison of types of support for lower-skill workers: evidence for the importance of family supportive supervisors. *Journal of Vocational Behavior*. 2011;79(3):653–66.
53. Van Amelsvoort LG, de Brouwer CP, Heerkens YF, Widdershoven GA, Kant I. Fostering functioning of workers: a new challenge for prevention in occupational health. *Work*. 2017;57(2):153–6.
54. de Brouwer CP, Verdonk P, van Amelsvoort LG, Jansen NW, Kant I, Widdershoven GA. Experiences of occupational physicians with the implementation of indicated prevention for long term sickness absence. *Work*. 2017;57(2):157–72.
55. Deci EL, Ryan RM. Self-determination theory. *Handbook of theories of social psychology*. Thousand Oaks, CA: Sage Publications Ltd; 2012;1: 416–36.
56. Hagger MS, Chatzisarantis NL. Integrating the theory of planned behaviour and self-determination theory in health behaviour: a meta-analysis. *British Journal of Health Psychology*. 2009;14(2):275–302.
57. Bandura A. *Self-efficacy: the exercise of control*. New York: Worth Publishers; 1997.
58. Lammerts L, Schaafsma FG, Van Mechelen W, Anema JR. Execution of a participatory supportive return to work program within the Dutch social security sector: a qualitative evaluation of stakeholders' perceptions. *BMC Public Health*. 2016;16:323.
59. Van Beurden KM, Vermeulen SJ, Anema JR, van der Beek AJ. A participatory return-to-work program for temporary agency workers and unemployed workers sick-listed due to musculoskeletal disorders: a process evaluation alongside a randomized controlled trial. *Journal of Occupational Rehabilitation*. 2012;22(1):127–40.
60. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ*. 2015;350:h1258.
61. Rosen L, Manor O, Engelhard D, Zucker D. In defense of the randomized controlled trial for health promotion research. *American Journal of Public Health*. 2006;96(7):1181–6.
62. Schelvis RM, Oude Hengel KM, Burdorf A, Blatter BM, Strijk JE, van der Beek AJ. Evaluation of occupational health interventions using a randomized controlled trial: challenges and alternative research designs. *Scandinavian Journal of Work, Environment & Health*. 2015;41(5):491–503.
63. Van Oostrom SH, Anema JR, Terluin B, Venema A, de Vet HC, van Mechelen W. Development of a workplace intervention for sick-listed employees with stress-related mental disorders: intervention mapping as a useful tool. *BMC Health Services Research*. 2007;7:127.
64. Vermeulen SJ, Anema JR, Schellart AJ, van Mechelen W, van der Beek AJ. Intervention mapping for development of a participatory return-to-work intervention for temporary agency workers and unemployed workers sicklisted due to musculoskeletal disorders. *BMC Public Health*. 2009:216.
65. Pehkonen I, Takala E-P, Ketola R, Viikari-Juntura E, Leino-Arjas P, Hopsu L, et al. Evaluation of a participatory ergonomic intervention process in kitchen work. *Applied Ergonomics*. 2009;40(1):115–23.
66. Buijs P, Gunnyeon B, van Weel C. Primary health care: what role for occupational health? *British Journal of General Practice*. 2012;62(605):623–4.
67. Van Oostrom SH, van Mechelen W, Terluin B, de Vet HC, Anema JR. A participatory workplace intervention for employees with distress and lost time: a feasibility evaluation within a randomized controlled trial. *Journal of Occupational Rehabilitation*. 2009;19(2):212–22.

Supplementary files

Supplementary file 1. Interview guides

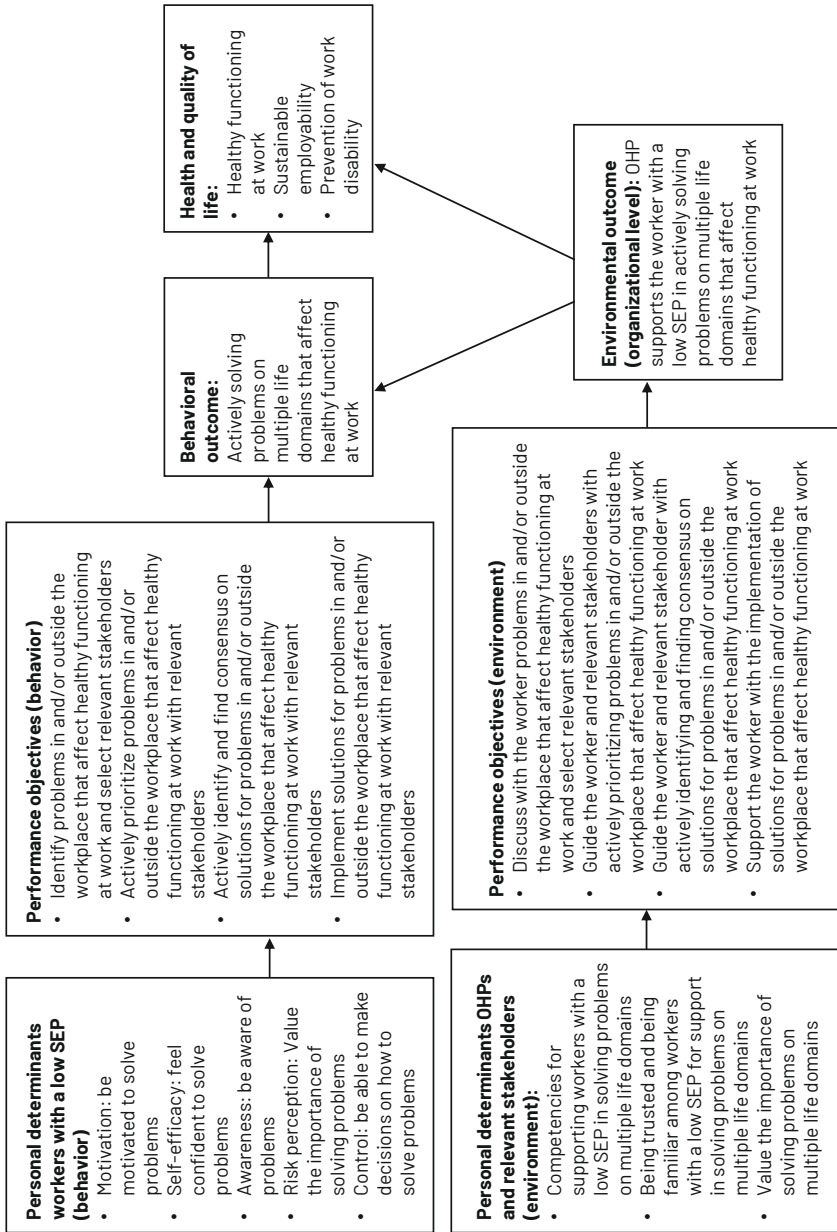
Interview guide interviews

1. What kind of (health) problems do you experience by yourself or among colleagues?
2. To what extent do you, or your colleagues, experience problems on multiple life domains?
3. What kind of life domains would you want to discuss at the workplace (e.g. work, lifestyle, etc.)?
4. With whom would you like to discuss problems on multiple life domains at the workplace?
5. In what kind of situation do you feel safe and confidential to discuss problems on multiple life domains?
6. In which way do you want to discuss problems on multiple life domains?
7. What do you think of the material for discussing problems?
8. What kind of information do you need for discussing solutions?
9. What do you think of the material for discussing solutions?
10. What do you think about making an action plan for solutions?
11. What kind of aspects do you want in an action plan?
12. What do you think of the material for making an action plan?
13. What do you think about the evaluation of an action plan?
14. What kind of aspects do you want to be in an evaluation?
15. What do you think of the material for an evaluation?
16. What do you think of inviting other people (e.g. supervisor, partner) to the conversations?
17. In which way could workers be reached for a preventive intervention?

Interview guide focus groups

1. What kind of life domains could be discussed with workers at the workplace (e.g. work, lifestyle, etc.)?
2. What kind of problems on multiple life domains could be discussed with workers at the workplace?
3. Which professionals at the workplace could implement this intervention?
4. In what way would workers want to discuss problems on multiple life domains?
5. What do you think of the material for discussing problems on multiple life domains?
6. What kind of information do you need for discussing solutions?
7. What do you think of the material for discussing solutions?
8. What kind of solutions can be offered to workers?
9. What kind of information do you need for making an action plan?
10. What do you think of the material for making an action plan?
11. What kind of information do you need for the evaluation?
12. What do you think of the material for the evaluation?
13. To what extent is it needed to invite other people (e.g. supervisor, partner) to the conversations?
14. To what extent is it feasible to invite other people (e.g. supervisor, partner), to the conversations?
15. In which way could employees be reached for this preventive intervention?
16. What is the added value of this intervention?

Supplementary file 2. Logic model of change



Supplementary file 3. Matrices of change for the behavioral outcome

Behavioral outcome: Actively solving problems on multiple life domains that affect healthy functioning at work

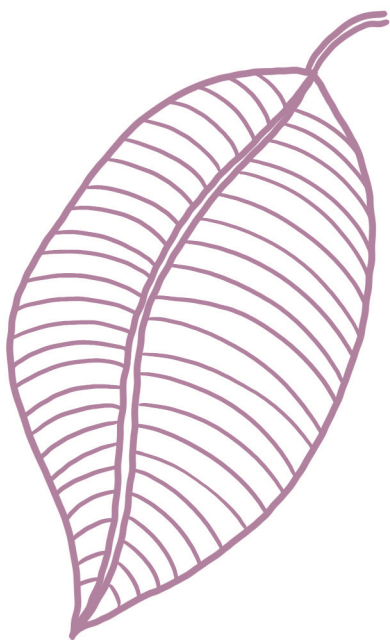
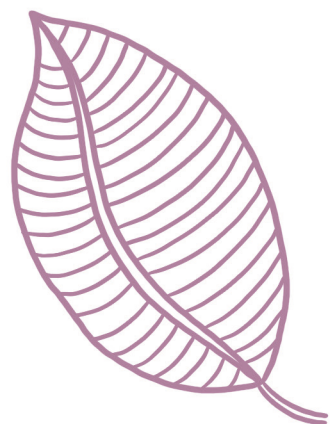
Performance objectives	Autonomy	Competence	Relatedness
1: Identify problems in and/or outside the workplace that affect healthy functioning at work and select relevant stakeholders	Being able to discuss problems in and/or outside the workplace with an OHP and to choose which stakeholder to involve	Feel confident in the ability to identify problems in and/or outside the workplace with an OHP	Experience a safe environment to discuss problems in and/or outside the workplace with an OHP
2: Actively prioritize problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders	Being able to prioritize most relevant problems in and/or outside the workplace or understand and accept the perspective of the stakeholder on problems	Feel confident in the ability to prioritize the most relevant problems in and/or outside the workplace with the stakeholder	Experience a safe environment and feel support from the OHP and the stakeholder to prioritize the most relevant problems in and/or outside the workplace
3: Actively identify and find consensus on solutions for problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders	Being able to choose solutions for problems in and/or outside the workplace or to understand and accept the perspective of the stakeholder on solutions	Feel confident in the ability to find solutions for problems in and/or outside the workplace with the stakeholder	Experience a safe environment and feel support from the OHP and the stakeholder in finding solutions for problems in and/or outside the workplace
4: Implement solutions for problems in and/or outside the workplace that affect healthy functioning at work with relevant stakeholders	Being able to implement solutions for problems in and/or outside the workplace or be involved in implementation of solutions by the stakeholder	Express confidence in the ability to implement solutions or that the stakeholder implements solutions for problems in and/or outside the workplace	Experience a safe environment and feel support from the OHP and the stakeholder for implementation of solutions for problems in and/or outside the workplace

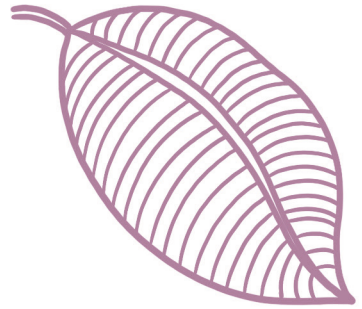
Supplementary file 4. Matrices of change for the environmental outcome

Environmental outcome: Support workers with a low SEP in solving problems on multiple life domains that affect healthy functioning at work

Performance objectives	Competence	Attitude
1: Discuss with the worker problems in and/or outside the workplace that affect healthy functioning at work and select relevant stakeholders	Being able to discuss problems in and/or outside the workplace with workers with a low SEP and to invite relevant stakeholders	Being positive towards identifying problems in and/or outside the workplace with workers with a low SEP and create a safe environment for the worker
2: Guide the worker and relevant stakeholder with actively prioritizing problems in and/or outside the workplace that affect healthy functioning at work	Being able to guide the worker and stakeholder with identifying the most relevant problems in and/or outside the workplace and involve the perspectives of the worker and the stakeholder on problems	Create a safe and supportive environment for the worker and the stakeholder to share perspectives on problems, remain impartial and only give advice on the most relevant problems
3: Guide the worker and relevant stakeholder with actively identifying and finding consensus on solutions for problems in and/or outside the workplace that affect healthy functioning at work	Being able to guide the worker and the stakeholder with identifying the most relevant solutions for problems in and/or outside the workplace and to involve the perspective of both the worker and the stakeholder on solutions	Create a safe and supportive environment for the worker and the stakeholder to share perspectives on solutions, remain impartial and only give advice on the most relevant solutions
4: Support the worker with the implementation of solutions for problems in and/or outside the workplace that affect healthy functioning at work	Being able to coach workers with a low SEP on how to implement solutions for problems in and/or outside the workplace or on how the stakeholder can implement solutions for the worker	Create a supportive environment for the worker in the implementation of solutions and coach the worker on the implementation of solutions

3





Chapter 4

The Grip on Health intervention to prevent health problems among workers with a lower socioeconomic position: a pilot implementation study

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Abstract

Objective: Workers with a lower socioeconomic position (SEP) often face problems on multiple life domains. This study evaluated an intervention to identify and solve problems on multiple life domains, called 'Grip on Health'.

Methods: A mixed methods process evaluation was performed among occupational health professionals (OHPs) and lower SEP workers with problems on multiple life domains.

Results: Thirteen OHPs delivered the intervention to 27 workers. For seven workers the supervisor was involved, and for two, stakeholders from outside the workplace. Agreements between OHPs with employers often affected implementation. OHPs were essential to help workers identify and solve problems. The intervention increased workers' health awareness and self-control and led to small and practical solutions.

Conclusions: Grip on Health can support lower SEP workers with solving problems on multiple life domains. However, contextual factors make implementation difficult.

Keywords: Intervention; Occupational Health Professional; Workers; Lower Socioeconomic Position; Health Problems; Implementation; Process Evaluation.

Introduction

Workers with a lower socioeconomic position (SEP) have an increased risk for health problems and thereby premature dropout from the labor market (1-3). The Participatory Approach (PA) is a commonly applied intervention to prevent or reduce health risks at the workplace (4-6). The PA consists of a stepwise process to identify and solve problems at the workplace, through involvement of relevant stakeholders (7). Until now the PA has been implemented among workers in a wide variety of industries and workplace settings, but has not been specifically tailored to the needs of lower SEP workers. Research showed that the PA can positively impact physical and mental health outcomes (4, 5) and is therefore a promising method to prevent health problems among lower SEP workers.

Whereas the PA solely focuses on problems at the workplace, problems outside the workplace also interfere with work functioning and health, and these problems are more prevalent among lower SEP workers (8, 9). This group of workers also has less problem-solving skills and is often confronted with an accumulation of problems (e.g. work-related problems, financial problems and/or unhealthy lifestyles), which makes it difficult for them to solve problems on their own (8, 9). Interventions that support lower SEP workers to solve problems on multiple life domains are therefore expected to be more effective (10). For that reason, the focus of the PA was extended to include a broader perspective on health to identify and solve problems on multiple life domains. This intervention is called 'Grip on Health'. In addition, the original PA materials were considered too complex for lower SEP workers (11) and were also adapted to align with the skills of these workers.

Process evaluations are used to understand the feasibility of the intervention, and to determine how, for whom and under what conditions the intervention is applicable in practice (12). Occupational health professionals (OHPs) deliver this intervention and many factors, such as competence and workload of OHPs, can influence implementation (13). Process evaluations can provide knowledge on whether the intervention was delivered as intended by OHPs, how they delivered the intervention in practice, and how they perceived its value to support lower SEP workers. In addition, a process evaluation can also provide more knowledge on whether the intervention has reached lower SEP workers as intended and fits this particular group of workers. More knowledge on the implementation of Grip on Health in practice, provides relevant insights on how OHPs could support lower SEP workers with solving problems on multiple life domains, in the context of Grip on Health and beyond.

The importance of process evaluations is increasingly being recognized, as implementation data are valuable for understanding how interventions work in real world settings (14). However, a review on process evaluations of workplace health promotion interventions showed that process evaluations mainly focused on what is delivered and on participation levels, rather than how an intervention is delivered, the quality of delivery, and reasons whether or not to participate in the intervention (13). To obtain comprehensive, in-depth information on the implementation process there is a need for systematic approaches in process evaluations, with data on a wide range of components, collected from different perspectives and with different type of methods (13-15). Therefore, this study evaluated the implementation process of the Grip on Health intervention in occupational health practice among OHPs and lower SEP workers, using both quantitative and qualitative methods.

Methods

Study design

The implementation process is evaluated by applying the Medical Research Council (MRC) process evaluation framework (12). Following this framework, the process evaluation consists of three parts: implementation (i.e. what is delivered and how?), mechanism of impact (how is the intervention perceived and how does it produce change?) and context (i.e. how does context affect implementation and outcomes?). The mixed methods process evaluation was performed between July 2019 and June 2021 by conducting questionnaires, checklists and semi structured (group) interviews among OHPs, semi structured interviews among lower SEP workers who participated in the intervention, and researcher logs. The Medical Ethics Committee of the VU University Medical Center approved the study protocol. OHPs and lower SEP workers signed written informed consent before participation.

The Grip on Health intervention

The intervention is a conversation method that consists of a stepwise process to identify and solve problems on multiple life domains that affect work functioning, with the involvement of at least one relevant stakeholder. This process is guided by an independent OHP who is in the role of process leader. In this intervention the PA is used, meaning that the process leader guarantees equivalent and active input of all participants (i.e. worker and other stakeholder) in each step of the intervention and generates consensus on the most important problems and solutions. Therefore, the PA is part of the intervention as a method to reach consensus among stakeholders, which is not the same as participatory action research. Participatory (action) research is a methodology to conduct research, in which researchers actively work together with participants to collect data and

they may also take actions to improve the problem that is researched (16). In this study Participatory (action) research is not used as methodology for conducting research, but a mixed method process evaluation.

In the first step of Grip on Health, the process leader and worker discuss problems on multiple life domains, prioritize problems and select the most relevant problems. Second, the process leader and worker decide which stakeholder is relevant to involve in the process, either someone in- or outside the workplace. In case of problems at the workplace, the supervisor is a relevant stakeholder. In case of problems outside the workplace, a partner, family member, or another health professional may be a relevant stakeholder. Third, the process leader, worker, and stakeholder (if involved) discuss the problems from their own perspective and strive to reach consensus on the most relevant problems. Fourth, the process leader, worker, and relevant stakeholder brainstorm about possible solutions, reach consensus on solutions and compose an action plan to implement solutions. Fifth, the process leader and worker evaluate the action plan and if needed an additional evaluation moment will be planned. For more information on the content of the intervention and the training for OHPs on the methodology of the intervention, see the article on the adaptation of the PA (17).

Recruitment

The intervention was delivered by OHPs in occupational health practice. OHPs were recruited through different occupational health services in the Netherlands and associations for OHPs. Through these organizations they were invited to participate in the Grip on Health training and this study to evaluate the intervention. OHPs could only participate if they had full confidentiality, because OHPs discuss problems on multiple life domains. In the Dutch context, this meant that, OHPs needed to be either registered physicians or nurses, or professionals, such as an occupational labor expert, who work under the legal supervision of an occupational physician. OHPs who wanted to participate in the training and this study received a half day training on how to follow the steps of the intervention. After the training OHPs signed informed consent to participate in this study. If they also wanted to participate in an interview, they signed informed consent before the start of the interview. During the training, OHPs received a practical assignment wherein they were asked to apply the intervention in occupational health practice. A couple of months after the training a follow up meeting was planned in which OHPs shared their experiences about the practical assignment, reflected on the different steps of the intervention and on their role as process leader.

OHPs delivered the intervention to lower SEP workers that were employed in organizations in which OHPs were working as a health professional. OHPs were

asked to deliver the intervention preventively, meaning that workers could already have problems on multiple life domains, but were not called in sick, or were on short-term sick leave (i.e. less than 6 weeks). Furthermore, lower SEP workers were all Dutch citizens, legally employed in a Dutch organization, with at least a permanent or fixed contract of more than 12 hours per week. OHPs delivered the intervention among lower SEP workers in case they noticed that workers had problems on multiple life domains that affected their work functioning or had a high degree of sickness absence. This means that lower SEP workers were recruited by OHPs as part of their normal way of working. Therefore, consent of the worker was not needed. OHPs only asked workers for consent to be approached by a researcher to schedule an interview. If a worker was willing to participate in an interview, then the worker signed informed consent before the start of an interview.

Data collection

The process evaluation among OHPs was conducted with mixed (quantitative and qualitative) methods during and after implementation of the intervention by means of: 1) questionnaires at the end of the training, which were completed by 35 OHPs, 2) checklists directly and 3 months after completion of the intervention, which were completed 27 times for workers who received the Grip on Health intervention, 3) semi structured group interviews during implementation with 13 OHPs who delivered and not (yet) delivered the intervention, 4) semi structured interviews after implementation, with 10 OHPs who delivered the intervention and three OHPs who did not implement the intervention, and 5) researcher logs during implementation of the intervention. The process evaluation among participants of the intervention was performed by conducting semi structured interviews with seven lower SEP workers who participated in all steps of the intervention. The checklists for OHPs and interview guides for OHPs and lower SEP workers can be found in additional file 1. The framework of the MRC was further operationalized by the use of the model of Linnan and Steckler (2002) and Carroll et al. (2007) (18, 19). Implementation was measured by reach, dose delivered and fidelity at OHP level, and quality of delivery at both OHP and participant level. Mechanisms of impact were measured by responsiveness and program differentiation, at OHP and participant level. Context was measured by investigating factors that affect implementation on the level of participants, intervention providers and the intervention itself (i.e. design and content of the intervention), and were part of the process evaluation components described above. This means that results of context are not displayed separately, but integrated in the process evaluation components. Contextual factors on organizational and socio-political level were described elsewhere (9). For further operationalization of the MRC framework see table 1.

Table 1. Operationalization of the Medical Research Council framework

Key component in relation to context	Component	Operationalization	Method	Level
Implementation	Reach	Amount and characteristics of OHPs that delivered the intervention and of participants that received the intervention, extent to which OHPs are suitable to provide the intervention and reasons of OHPs whether or not to provide the intervention	Checklists, logs, and interviews	OHP
	Dose delivered	Amount of intended intervention steps delivered, whether this is feasible and which factors play a role in the delivery of the intervention	Checklists, interviews	OHP
	Fidelity	The extent to which OHPs discuss problems on multiple life domains, guide workers with actively prioritizing and identifying problems and solutions and involve relevant stakeholders	Checklists, interviews	OHP

Table 1. Operationalization of the Medical Research Council framework

Key component in relation to context	Component	Operationalization	Method	Level
	Quality of delivery	The extent to which workers were satisfied with the process leader and the extent to which OHPs are in the role of process leader, meaning that the worker is able to identify and prioritize problems and solutions, they create a confidential/ safe environment, and acknowledge all perspectives, remain impartial, and generate consensus in case a stakeholder is involved	Interviews	OHP, participant
Mechanisms of impact	Responsiveness	Perceived satisfaction about the intervention, materials of the intervention and perceived effectiveness	Checklists, interviews	OHP, participant
	Program differentiation	Unique aspects of the intervention that are perceived essential and contribute to positive effects	Interviews	OHP, participant

Data-analysis

Quantitative data were analyzed using descriptive statistics. Qualitative data were audio-taped and transcribed verbatim. The analysis started with re-reading the transcripts, listening to audiotapes, and making summaries of each transcript to become familiar with the data. Subsequently, textual segments were inductively open coded by the first coder (RS) to produce an initial list of codes indicating the content of the textual segments. Another coder (EV) read two transcripts and also performed open coding. The codes of these two transcripts were compared and

discussed between the first and second coder (RS, EV) to reach consensus on the codes. Next, codes were deductively categorized according to the different process evaluation components, as were described in table 1. An overview of codes can be found in additional file 3.

Results

Evaluation of the training of occupational health professionals

Between July 2019 and October 2020 six sessions of the training were provided to 36 OHPs. See table 2 for the main characteristics of these OHPs. Two of these sessions were provided online due to the Covid-19 pandemic. The training was rated on average 8.2 on a scale from 1-10. Role-playing and the possibility to interact with each other were rated most positive. Suggested improvements for the training related to more practice time for role-playing, and to the relevance of provided information as for some OHPs not all information was new.

Table 2. Characteristics of occupational health professionals who participated in the training

Characteristics		N
Employed by	Employed by an occupational health service	32
	Self-employed	4
Profession	Absenteeism consultant/employability coach	10
	Occupational nurse/employability coach	7
	Occupational physician	6
	Work ability specialist	6
	Occupational labor expert	4
	Occupational social worker	2
	Return to work coordinator	1

Implementation of the Grip on health intervention

In the following section of the results, we will describe implementation (i.e. what is delivered and how?) by reach, dose delivered, fidelity and quality of delivery, taking contextual factors into account that may affect or affected implementation of Grip on Health.

Reach

Thirteen OHPs delivered the intervention in practice. These professionals were: absenteeism consultants and/or employability coaches (N=3), occupational nurses and/or employability coaches (N=3), work ability specialists (N=2), occupational social workers (N=2), occupational physicians (N=2) and one occupational labor expert (N=1). Twenty-three OHPs did not deliver the intervention in practice. These professionals were: absenteeism consultants and/or employability coaches (N=7),

occupational nurses and/or employability coaches (N=4), work ability specialists (N=4), occupational physicians (N=4), occupational labor expert (N=3), and one return to work coordinator (N=1). The main reasons for OHPs to not deliver the intervention are described in box 1.

Box 1: Main reasons for OHPs to not deliver the intervention:

Reason	N (reason mentioned by OHPs)
Mainly in contact with higher SEP workers or with workers on long-term sick leave in daily practice	10
Lack of time (for multiple consultations)	9
Lower SEP workers with problems on multiple life domains are difficult to reach (preventively) in daily practice	7
No permission from contracted employer, due to other priorities or other comparable interventions in practice	5
Solely conducts consultations by telephone, partially due to Covid-19 pandemic	4
No time to (preventively) reach workers or no request for (preventive) consultations, due to the Covid-19 pandemic	3

In total, 27 workers received the Grip on Health intervention. The main characteristics of these workers are described in table 3. While the focus of our study was on lower SEP workers, OHPs stated in the interviews that this intervention is also relevant for high SEP workers, as they may also face problems on multiple life domains and may find it difficult to solve these problems.

OHPs reported that the intervention could be delivered by any type of OHP. Some reported that particularly occupational social workers are most suitable to deliver this intervention, as they already discuss problems on multiple life domains in their daily practice. However, others reported that this intervention could also be helpful for OHPs who usually do not discuss problems on multiple life domains. Several OHPs, including OPs themselves, mentioned that OPs are less suitable to deliver this intervention, due to a lack of time. Thus, other professionals with more time, such as occupational nurses, seem to be more suitable to deliver the intervention, as one OHP mentioned in an interview:

OHP1: We as occupational nurses have an hour or one hour and a half, while you only have a maximum of half an hour at the doctor's office, and occupational nurses are therefore very suitable, from my perspective, to make the connection between the medical and private perspective.

Table 3. Characteristics of participants in the intervention

Characteristics		N
Type of occupations	Administrative related (e.g. secretary worker)	7
	Manufacturing related (e.g. production worker)	10
	Service related (e.g. service desk, kitchen worker)	4
	Health related (e.g. home care worker)	2
	Unknown	4
	Blue-collar occupation	14
	Non-blue-collar occupation	13
Type of contract	Number of hours according to contract	Mean 35.3(24-40 hours)
Sex	Man	15
	Woman	12
Age	<35 years	7
	35-55 years	13
	>55 years	7
Chronic disease	Yes	14
	No	13

Some, OHPs mentioned that professionals outside occupational health care, such as social workers or general practice nurses, could also deliver the intervention, as they are better able to reach lower SEP workers with problems on multiple life domains. However, in case there are problems at the workplace it is important that these professionals refer workers to OHPs or collaborate with them.

Dose delivered

OHPs needed on average 3 to 4 consultations to deliver the intervention. Among 16 workers all intended intervention steps were delivered. Step 6: solution analysis, step 7: action plan and step 8: evaluation, were delivered the least, because workers were not willing to continue, the intervention led to undesirable results for the worker, the worker and employer were unable to come to an agreement or had a conflict, or the OHP was not involved in these steps. In the interviews, half of the OHPs reported they had insufficient time to deliver the intervention as intended. Discussing problems on multiple life domains can take a lot of time, as was stated by an OHP:

OHP4: For that part you actually need an hour according to this method, and I only had half an hour. Then you just find out that to discuss problems on multiple life domains, you can't do that in half an hour. So, I had to do that in two parts.

Moreover, several OHPs reported they needed to ask permission in advance from the involved employer to deliver this type of intervention, meaning sufficient consultation time or being able to involve a stakeholder at the workplace. In contrast, the other half of the OHPs reported they had sufficient time, as they don't need to ask or already have permission from contracted employers or from their own occupational health service to deliver interventions, such as Grip on Health. Some OHPs also reported they gained trust from contracted employers to organize their own time for a consultation, or that the intervention was comparable to their normal way of working, also meaning they had sufficient time. OHPs also reported that involved employers who recognize the potential value of prevention and sustainable employability for their employees, provide OHPs more consultation time, and they are more willing to involve a stakeholder at the workplace in the intervention.

Fidelity

The checklists showed that for the majority of the workers problems and solutions were identified for both in- and outside the workplace (see table 4). Several OHPs stated in the interviews that the discussion of problems on multiple life domains was self-evident and part of their normal way of working. Most solutions that were suggested in the intervention were implemented, and implementation was mostly performed by workers themselves.

Table 4. Identification of problems and implementation of solutions

Problems and solutions		N
Type of problems	In the workplace	26
	Outside the workplace	23
	Both in- and outside the workplace	22
Discussed problems in the workplace	Problems related to job content	14
	Problems related to working environment	16
	Problems related to working conditions	5
	Physical health problems in the workplace	10
	Mental health problems in the workplace	13
	Lifestyle related problems in the workplace	4
	Socially related problems in the workplace	11
Discussed problems outside the workplace	Physical health problems outside the workplace	7
	Mental health problems outside the workplace	16
	Lifestyle related problems outside the workplace	9
	Socially related problems outside the workplace	15
Type of solutions	For problems in the workplace	24
	For problems outside the workplace	20
	For both problems in- and outside the workplace	19

Table 4. Identification of problems and implementation of solutions

Problems and solutions		N
Number of solutions that were implemented	Implemented	48
	Not implemented/unknown	8
Implemented by	Worker	21
	Supervisor	1
	Worker & supervisor	11
	Worker & professional from outside the workplace	3
	Worker & partner	1
	Unknown	11

The checklists showed that among only seven workers, supervisors were involved as a stakeholder in the intervention. However, in the interviews several OHPs stated that involvement of supervisors in general takes place very often, but coincidentally did not happen during the intervention. Consultations of OHPs with a worker and supervisor are often part of their normal way of working. OHPs stated that supervisors can provide different insights into the problems of the worker in the workplace, and if workers and supervisors jointly identify and reach consensus on solutions it increases the chance that solutions are actually implemented (faster) at the workplace:

OHP4: In a conversation with the supervisor, they search for solutions together, it isn't something that is enforced from the outside. It becomes something of their own and eventually a sort of psychological contract where they feel bound to each other to implement the actions. So, the chance that it will be carried out is much higher.

There were also OHPs that did not involve supervisors in consultations. One OHP described that involving a supervisor implies that workers' problems affecting their work functioning come to the surface, which could lead to negative outcomes such as not extending temporary contracts. Other reasons mentioned by OHPs not to involve supervisors were: 1) supervisors are never involved in consultations, but only managers of supervisors or human resource case-managers, 2) supervisors themselves conduct preventive consultations and OHPs only with workers on sick leave, 3) supervisors are unavailable due to a lack of time, 4) supervisors do not see the added value, 5) workers discuss problems with the supervisor themselves or OHPs notify supervisors on what was discussed, 6) consultations were online or OHPs were not physically present at organizations, or 7) there was a conflict between the worker and supervisor. The checklists showed that in only two cases a stakeholder from outside the workplace was involved. This was also highlighted during the interviews, as OHPs stated that stakeholders from

outside the workplace are sometimes involved and not as often as supervisors. These stakeholders are often spouses who may provide extra information on the situation of workers at home or could positively influence implementation of solutions, as was described by an OHP:

OHP2: I also notice that it has been discussed at home with their partner, and that in certain situations the partner tells me that the two of them will work on it together, but then I think something will actually happen.

However, OHPs stated that involvement of spouses could also hinder the implementation of solutions. For instance, they could control the process and outcome of the conversation, or the conversation is used to discuss relationship problems. Furthermore, OHPs stated that a professional from outside the workplace such as general practitioners or social workers is never involved in their consultations, and doing so is reported as complex. Involvement of other professionals solely implies requests for information about the workers' health or referrals. Some OHPs stated that collaboration could be helpful to avoid conflicting advice for the worker.

Quality of delivery

In the interviews, some OHPs stated that the role of the process leader is not difficult, as it is part of their normal way of working and lower SEP workers are able to identify problems and/or solutions, but occasionally need support. In contrast, there were also OHPs that perceived the role of process leader as difficult, because they reported that lower SEP workers are less able to identify problems and/or solutions on their own and need much support. OHPs reported that lower SEP workers have many different problems, leading to a stressful situation, which makes it difficult to disentangle their problems. This is in line with what was described by the participants, as the majority stated that they were satisfied with the OHP because they listened well to their problems and thought along to identify problems and/or solutions. OHPs also mentioned that self-control is more difficult for lower SEP workers. They are used to professionals telling them what to do, and are less used to take on an active role, to reflect on their problems and on what they themselves can do to solve their problems:

OHP4: People of this target group are not used to talk about their problems, to take self-control, and to discuss solutions with the supervisor, because these are topics that you don't show off with, make you vulnerable, make you ashamed, or which is difficult to talk about.

As a result, OHPs stated that it is difficult to convince lower SEP workers to take on an active role, and to make them aware of their own role in solving problems.

An important condition for self-control stated by OHPs is that the worker sees his or her own role in solving problems. In contrast to lower SEP workers finding it difficult to take on an active role, OHPs may not always give workers the opportunity to take on an active role. OHPs stated that they are used to take on the role of the expert. If workers themselves come up with solutions, OHPs sometimes have to refrain themselves to give their opinion on the feasibility of solutions. Some OHPs stated that they first gave workers the opportunity to experience whether a solution works. If not, OHPs can always advise workers on other solutions. In addition, workers do not always have an overview of possible solutions. In these cases, OHPs stated they provided several possible solutions workers could choose from.

Participants reported they were satisfied about their consultations with OHPs. Participants felt they were in a safe and confidential environment, wherein they could talk openly about their problems in- and outside the workplace. OHPs communicated in a good and pleasant way, participants felt understood and supported by OHPs, as was described by one participant:

P2: He actually listened very carefully to what was going on and he thought along very well with solutions. So yeah, that was very nice.

In case supervisors were involved in the intervention, OHPs stated they obtained a safe and confidential environment, equality between the worker and supervisor, and reached consensus on problems and solutions. Participants perceived the involvement of supervisors as positive, because they were able to inform the supervisor about their problems and problems were solved faster. However, OHPs mentioned this is dependent on the relation between workers and supervisors. In case of a good relation, workers are more willing to share their problems. If this is not the case and there is a lack of trust between a worker and supervisor, to obtain a safe and confidential environment is difficult. OHPs also stated that the hierarchical relation between the worker and supervisor is not always easy to change, and they need to be open to a different role.

Mechanisms of impact

In the following section we will describe mechanisms of impact (i.e. how is the intervention perceived and how does it produce change?) by responsiveness and differentiation, taking contextual factors into account that may affect or have affected mechanisms of impact of Grip on Health.

Responsiveness

Both OHPs and participants mentioned in the interviews that the intervention is structured, clear, and according to OHPs relevant for lower SEP workers. Several

OHPs stated that the intervention is comparable to their normal way of working, but a helpful tool to conduct consultations and to reassure that all steps are performed. Both OHPs and participants were positive about the visual materials of the intervention, as it was a useful tool to discuss and identify problems on different life domains. However, OHPs stated that they mainly used the visual map to discuss problems (see image 1). The other materials were perceived too difficult for lower SEP workers, as these contained writing assignments and relied too much on problem-solving skills.

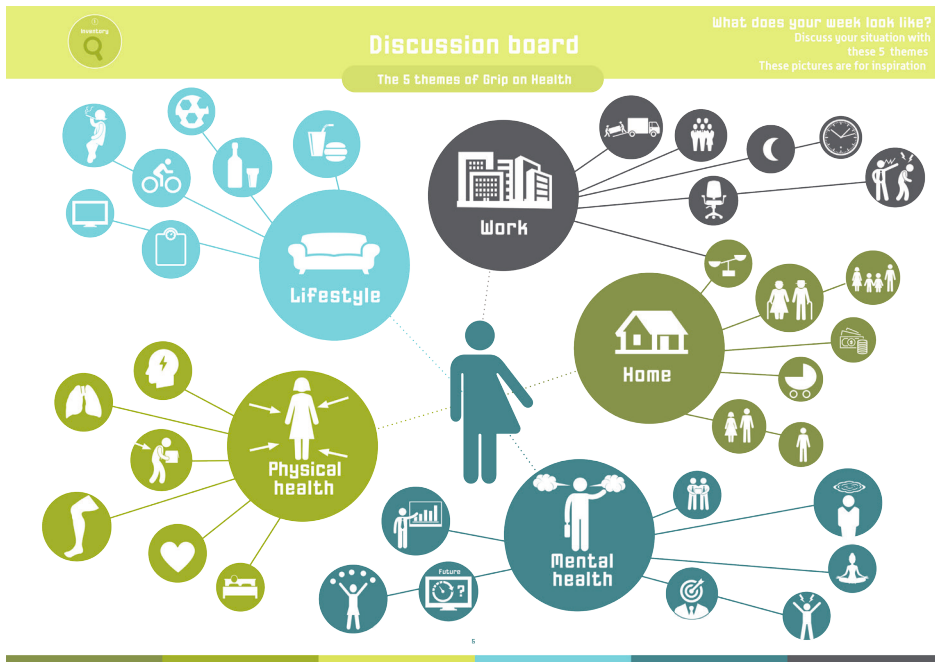


Image 1. Visual map

The intervention was perceived useful by most participants and OHPs, as the intervention could have positive effects on health, sick leave or functioning of workers, which was also presented in the results of the checklists (see table 5). In contrast, some other OHPs mentioned it is uncertain whether the intervention leads to positive effects. However, both participants and OHPs mentioned the intervention increased workers’ awareness of their health and own role in solving problems, which motivates them to reflect on what they themselves can do to improve their health, as was described by an OHP:

OHP7: Well, I think that this method helps people to become aware of what they could change. Initially to become aware of it, to become self-conscious of what I actually

face? Which problems emerge? And then to make them aware of what they could change to actually achieve an improvement of the situation.

OHPs and participants also described that the intervention led to small and practical solutions, which will according to OHPs not immediately lead to large effects, but a higher chance of solutions being implemented and workers experiencing success. This was also showed in the results of the checklists, as solutions were to a reasonable extent implemented (see table 5).

Table 5. Provider responsiveness

		Mean
Satisfaction*	Satisfaction process	4.07
	Satisfaction effectiveness	4.00
	Satisfaction of the worker	3.88
Perceived effectiveness**	Health	3.64
	Work functioning	3.43
	Working conditions	2.86
	Living conditions	3.56
	Self-control	3.52
	Support workers on solving problems	3.18
Solutions***	Solutions implemented	2.45
		N
Type of problems solved in the workplace	Job environment related problem	4
	Job content related problem	4
	Physically related problem at work	5
	Mentally related problem at work	6
	Socially related problem at work	3
Type of problems solved outside the workplace	Physically related problem outside the workplace	2
	Mentally related problem outside workplace	7
	Lifestyle related problem outside the workplace	3
	Socially related problem outside the workplace	9
Sick leave	Prevented sick leave	4
	Decreased duration of sick leave	13
	Not decreased duration or prevention of sick leave	5

*Scale:1=very unsatisfied, 5=very satisfied; **Scale:1=not at all, 5=to a very large extent;

***Scale:1=all solutions implemented, 5=no solutions implemented

Although OHPs were reassured that this intervention could lead to positive effects, they also reported that this depends on the worker him-/herself and on external factors in- or outside the workplace. Initially, the worker must be open

to change, and see their own role in this process. If the worker does not see the problem or is not willing to take on an active role, it is likely that the intervention is less effective. Moreover, OHPs mentioned that some involved employers are not always willing to cooperate in the implementation of solutions or to pay for a solution resulting from the intervention. Finally, social pressure of colleagues or from the social environment of workers at home may also hamper the implementation of solutions.

Program differentiation

OHPs and participants of the intervention reported several essential intervention components that may contribute to positive effects. First, OHPs and participants expressed that the intervention provided an overview of all life domains, which provides workers more insight into (underlying) problems. As a result, workers became aware of problems they did not see themselves, or of problems that influenced their work functioning, as was described by a participant:

P4: I thought it was primarily about the panic attack, but she asked me questions and she talked about certain things more deeply and then a completely different issue came up, which played a role on the background for a long time and the panic attack was an expression of that, and because she asked good questions, this came up all of a sudden.

Second, OHPs and participants described that the structured method and visual materials helped workers to actively discuss problems and to get an overview of their problems. Finally, workers are in the lead to identify problems and solutions, which improves their feelings of self-control and a higher chance that solutions are being implemented.

Discussion

The aim of this study was to systematically evaluate the implementation process of the Grip on Health intervention in occupational health practice among OHPs and lower SEP workers. Grip on Health can be used to identify and solve problems on multiple life domains among lower SEP workers. Both OHPs and lower SEP workers were satisfied about the intervention and in particular with visual materials of the intervention, as this helped workers to actively discuss and identify their problems. However, many OHPs also experienced difficulties to deliver Grip on Health in occupational health practice.

Many OHPs, including those who delivered the intervention, reported difficulties to preventively reach lower SEP workers, which was also described in other interventions (20). OHPs who succeeded to reach lower SEP workers in this study,

indicated that the intervention was often initiated by the employer or was part of a preventive occupational health examination or absenteeism consultation. Thus, it seems that lower SEP workers do not tend to visit an OHP on their own initiative. OHPs in this study stated that familiarity of the preventive role of OHPs is low, which is in line with findings of another implementation study (21). OHPs in this study described that any type of OHP could deliver this intervention, as most OHPs already discuss problems on multiple life domains, and it is part of their normal way of working. Moreover, the group of OHPs who did and those who did not deliver the intervention both consisted of a variety of professions. However, discussing and solving problems on multiple life domains can take a lot of time, which was not always available in practice, as was mentioned as one of the reasons to not deliver the intervention. The lack of time experienced by some OHPs often relates to agreements between OHPs and involved employers about the duration of their consultation time. Furthermore, no permission from contracted employers to deliver the intervention was also one of the main reasons to not deliver the intervention. A review on health promotion programs in the workplace showed that management support was the most frequently reported facilitator for delivering interventions (13). In the Netherlands, employers pay for, and therefore largely determine, the content and extent of occupational health services provided. In addition, a context analysis for implementation of preventive interventions that consider multiple life domains showed that not all employers feel primarily responsible for solving problems on multiple life domains and still invest too little in prevention (9).

Findings of this study also showed that implementation of the intervention was (very) limited. One contextual factor which has probably played a role is the Covid-19 pandemic and the increased use of online consultations instead of face-to-face consultations. Moreover, OHPs who succeeded to deliver the intervention could not always deliver all intended steps due to the online consultation sessions. In line, another study evaluating Grip on Health among OHPs and general practitioners, showed that it was not feasible to use the materials in an online meeting (22). Furthermore, during the Covid-19 pandemic stakeholders at the workplace may have had other priorities than to support preventive interventions focused on multiple life domains. Involving stakeholders at the workplace with lower SEP workers is in general considered difficult, because they not always have time or see the added value of preventive interventions, as was described in this study and in literature (23, 24). It is, however, difficult to conclude that the implementation of Grip on Health was either successful or has failed. In implementation science there has been a debate about the balance between fidelity (i.e. intervention is delivered as intended) and the need for adaptation (i.e. changes in the intervention to fit the context) (25). The results of this study showed that for some parts adaptation to the intended intervention was valid. OHPs often had good reasons

for not delivering all intervention steps. For example, workers who were not willing to continue or who were not able to come to an agreement with their supervisor, while readiness to participate and having an open mind is a precondition to participate in this participatory intervention (7).

Involving professionals from outside the workplace in solving problems was considered too complex by the OHPs in this study. This is probably related to the strict separation in the Netherlands between occupational and curative healthcare, which makes collaboration difficult between professionals from in- and outside the workplace (9). Moreover, literature suggests that skills of OHPs to involve stakeholders play an important role, and training OHPs in involving stakeholders would be useful (26). For instance, a study on involving significant others, such as the partner, showed that OHPs have an important role in informing workers about the possibility to involve significant others (27). This kind of skills were not addressed in the Grip on Health training and could therefore also have played a role in the limited involvement of stakeholders outside the workplace.

In this study, the role of the process leader was perceived as challenging by most OHPs in this study. They are used to take on the role of the expert and to provide advice to workers on how to solve their problems. Moreover, OHPs described that lower SEP workers find it difficult to take self-control, as they are less able to identify problems and/or solutions on their own. However, both OHPs and workers in this study stated that the intervention was perceived as effective, mainly due to increasing workers' awareness of health problems. Increasing awareness is the first stage in the transtheoretical model of change (28). This is called the precontemplation phase, wherein people do not intend to act, and they are often unaware of their problems. This study showed that the intervention provided more insight into problems by discussing different life domains. This is very helpful, as literature shows that lower SEP workers may have a lower awareness and risk perception of their health problems (8, 17). Moreover, people with problems on multiple life domains are often in a state of chronic stress, wherein they are unable to oversee their problems (29). As a result, people may find it more difficult to be aware of problems and could use passive or avoidant coping styles towards their problems. This may underline the finding in this study that the intervention was also perceived relevant for higher SEP workers. For instance, another study that evaluated Grip on Health also found that this intervention could be applied to a wider group of people (22). People with problems on multiple life domains, and especially people with psychological health complaints, have less structure and overview which temporarily affects their problem-solving skills. These findings may indicate that it is not about the classification of groups into a lower or higher SEP, but about the circumstances in which people live (30).

In the study about the development of the intervention (17), the Self Determination Theory was selected as a theory to enable lower SEP workers to actively identify and solve problems and may further clarify why both OHPs and workers perceived the intervention to be effective. This theory argues that by increasing autonomy, competence and relatedness, health related behaviors are more likely to be initiated and maintained and thereby motivation of workers to actively solve their problems is increased (31). The need for autonomy, competence and relatedness could all be identified in the findings of this study regarding mechanisms of impact. Autonomy may have been fulfilled, as both OHPs and participants described that this intervention made workers more aware of the problems they could intervene on, and that workers were in the lead to identify the most relevant problems and solutions, which could improve their feelings of self-control. Competence may have been fulfilled, as OHPs described that the intervention led to small and practical solutions, which in turn increases one's belief in the ability to succeed (32). Finally, relatedness of workers may have been fulfilled by a supportive environment of OHPs or other stakeholders to solve their problems.

Strengths and limitations

A strength of this study is the use of a comprehensive framework to evaluate the implementation process, which resulted in detailed information about implementation of the Grip on Health intervention in practice. Although Grip on Health was developed using an intervention mapping protocol (17), this study provided additional information on the applicability and feasibility of this intervention in practice. Moreover, data was collected from both the perspective of OHPs and lower SEP workers, and a combination of quantitative and qualitative data collection was performed, increasing credibility of findings (33). The data from interviews helped to interpret the results of the checklists or to ensure that findings of the checklists are grounded in the experiences of OHPs and lower SEP workers about the intervention. A limitation of this study is that a large proportion of the data on lower SEP workers was collected through OHPs. OHPs may hold different views on the intervention than lower SEP workers themselves (34), affecting credibility and transferability of findings (33). However, the contextual factors affecting implementation of Grip on Health in this study were also found in other studies (9, 22), suggesting good transferability and confirmability of findings. Another limitation is that selection bias may have occurred. Lower SEP workers, that were interviewed in this study, all participated in the Grip on Health intervention and were mainly positive about the intervention. We failed to recruit lower SEP workers that did not participate in the intervention to obtain a more complete view of the experiences of lower SEP workers. This means that it is debatable whether data saturation took place for the qualitative data among lower SEP workers, affecting dependability of findings (33). This was not the case among OHPs, both those who delivered and those who did not deliver

the intervention were interviewed and data was collected until no new themes emerged in the interviews. Unfortunately, no information was collected on OHP characteristics (e.g., sector and size of organization). This could have given more insight in facilitators and barriers for implementing Grip on Health.

Implications for research and practice

For OHPs to successfully deliver the intervention, it is important that they are able to preventively reach lower SEP workers for the Grip on Health intervention. From this study we learned that OHPs should make use of additional methods, e.g. preventive health examinations, to reach workers preventively. Some OHPs in this study stated that health professionals in curative healthcare could also deliver this intervention, because they are better able to reach lower SEP workers with problems on multiple life domains. GPs are often the first health professional for workers to discuss their health complaints and workers make little use of the opportunity to visit an OHP preventively (9). Therefore, further research should explore how professionals from outside occupational health care can play a role in preventively reaching lower SEP workers or on how they can deliver this intervention. The MRC framework describes that context is one of the main aspects that affect implementation of interventions (12). In this study, factors on organizational and socio-political level made it difficult for OHPs to deliver the intervention in occupational health practice. A hindering factor for implementation is that employers eventually determine whether preventive interventions, such as Grip on Health, are delivered to workers. Hence, for OHPs to be able to deliver the intervention and to have sufficient time, cooperation or permission from the involved employer is essential. Another hindering factor is the strict separation in the Netherlands between occupational and curative healthcare, which caused difficulties for OHPs to involve professionals from outside the workplace in the intervention. To effectively solve problems on other domains than work, collaboration with professionals from outside the workplace may be needed. Hence, further research is needed on how this collaboration could be improved. This study also showed that lower SEP workers find it more difficult to take self-control. The Dutch government and society encourage workers to take self-control for health and sustainable employability (35). Lower SEP workers need adequate support from OHPs. However, OHPs in this study experienced difficulties with their role as a process leader, as they are used to take on the role of the expert and workers find it difficult to identify problems and/or solutions on their own. Hence, education of OHPs needs to focus more on how to enhance self-control among (lower SEP) workers.

Conclusions

This study showed that Grip on Health can be a successful method to support lower SEP workers with solving problems on multiple life domains. However, many OHPs found it difficult to deliver the intervention in daily practice, mainly due to contextual factors. Successful implementation of this intervention in occupational health practice could be improved by more research on how to effectively tackle contextual factors.

References

1. Hu Y, van Lenthe FJ, Borsboom GJ, Looman CWN, Bopp M, Burström B, et al. Trends in socioeconomic inequalities in self-assessed health in 17 European countries between 1990 and 2010. *Journal of Epidemiology and Community Health*. 2016;70(7):644-52.
2. Polvinen A, Gould R, Lahelma E, Martikainen P. Socioeconomic differences in disability retirement in Finland: The contribution of ill-health, health behaviours and working conditions. *Scandinavian Journal of Public Health*. 2013;41(5):470-8.
3. Robroek SJ, Rongen A, Arts CH, Otten FW, Burdorf A, Schuring M. Educational Inequalities in Exit from Paid Employment among Dutch Workers: The Influence of Health, Lifestyle and Work. *PLoS One*. 2015;10(8):e0134867.
4. Cole D, Rivlis I, Van Eerd D, Cullen K, Irvin E, Kramer D. Effectiveness of participatory ergonomic interventions: a systematic review. *Database of Abstracts of Reviews of Effects (DARE): Quality-assessed Reviews*. Toronto: Institute for Work and Health; 2005.
5. Tsutsumi A, Nagami M, Yoshikawa T, Kogi K, Kawakami N. Participatory Intervention for Workplace Improvements on Mental Health and Job Performance Among Blue-Collar Workers: A Cluster Randomized Controlled Trial. *Journal of Occupational and Environmental Medicine*. 2009;51(5):554-63.
6. Driessen MT, Proper KI, Anema JR, Knol DL, Bongers PM, van der Beek AJ. The effectiveness of participatory ergonomics to prevent low-back and neck pain—results of a cluster randomized controlled trial. *Scandinavian journal of work, environment & health*. 2011;37(5):383-93.
7. Huysmans MA, Schaafsma FG, Viester L, Anema JR. Multidisciplinaire Leidraad Participatieve Aanpak op de Werkplek – Hoofddocument en achtergronddocument. VU Medisch Centrum: EMGO Instituut voor onderzoek naar Gezondheid en Zorg; 2016.
8. Burdorf A, Robroek SJ, Schuring M. Kennissynthese Werk (en) is Gezond. ZonMw; 2016.
9. Schaap R, Schaafsma FG, Huysmans MA, Bosma AR, Boot CR, Anema JR. A Context Analysis with Stakeholders' Views for Future Implementation of Interventions to Prevent Health Problems Among Employees with a Lower Socioeconomic Position. *Journal of Occupational Rehabilitation*. 2022; 32(3):438-451.
10. Beenackers MA, van Lenthe FJ, Oude Groeniger J, Nusselder WJ, Mackenback JP. Effective interventions to reduce socioeconomic inequality in health. *Healthy Equity* 2020. 2016;2.
11. Van Beurden KM, Vermeulen SJ, Anema JR, van der Beek AJ. A participatory return-to-work program for temporary agency workers and unemployed workers sick-listed due to musculoskeletal disorders: a process evaluation alongside a randomized controlled trial. *Journal of occupational rehabilitation*. 2012;22(1):127-40.
12. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ*. 2015;350:h1258.
13. Wierenga D, Engbers LH, Van Empelen P, Duijts S, Hildebrandt VH, Van Mechelen W. What is actually measured in process evaluations for worksite health promotion programs: a systematic review. *BMC Public Health*. 2013;13:1190.
14. Durlak JA, DuPre EP. Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*. 2008;41(3-4):327-50.
15. Hasson H. Systematic evaluation of implementation fidelity of complex interventions in health and social care. *Implementation Science*. 2010;5:67

16. Baum F, MacDougall C, Smith D. Participatory action research. *Journal of Epidemiology and Community Health*. 2006;60(10):854-7.
17. Schaap R, Schaafsma FG, Bosma AR, Huysmans MA, Boot CR, Anema JR. Improving the health of workers with a low socioeconomic position: Intervention Mapping as a useful method for adaptation of the Participatory Approach. *BMC Public Health*. 2020;20(1):961.
18. Steckler AB, Linnan L, Israel B. *Process evaluation for public health interventions and research*. San Francisco, CA: Jossey-Bass; 2002.
19. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balan S. A conceptual framework for implementation fidelity. *Implementation Science*. 2007;2:40.
20. Magnée T, Burdorf A, Brug J, Kremers SP, Oenema A, van Assema P, et al. Equity-Specific Effects of 26 Dutch Obesity-Related Lifestyle Interventions. *American Journal of Preventive Medicine*. 2013;44(6):e57-66.
21. De Brouwer CP, Verdonk P, van Amelsvoort LG, Jansen NW, Kant I, Widdershoven GAM. Experiences of occupational physicians with the implementation of indicated prevention for long term sickness absence. *Work*. 2017;57(2):157-72.
22. Vossen E, van der Gulden JW, van Genabeek JA, Schaap R, Anema JR, Schaafsma FG. Process evaluation of the 'Grip on Health' intervention in general and occupational health practice. *BMC Health Services Research*. 2022;22(1):1459.
23. Hanna ES, Markham S. Constructing better health and wellbeing? Understanding structural constraints on promoting health and wellbeing in the UK construction industry. *International Journal of Workplace Health Management*. 2019;12(3):146-59.
24. Miller P, Haslam C. Why employers spend money on employee health: Interviews with occupational health and safety professionals from British Industry. *Safety Science*. 2009;47(2):163-9.
25. Von Thiele Schwarz U, Aarons GA, Hasson H. The Value Equation: Three complementary propositions for reconciling fidelity and adaptation in evidence-based practice implementation. *BMC Health Services Research*. 2019;19(1):868.
26. Sharp RJ, Hobson J. Patient and physician views of accompanied consultations in occupational health. *Occupational Medicine*. 2016;66(8):643-8.
27. Snippen NC, de Vries HJ, Bosma AR, van der Burg-Vermeulen SJ, Hagedoorn M, Brouwer S. Workers' views on involving significant others in occupational health care: a focus group study among workers with a chronic disease. *Disability and Rehabilitation*. 2022;44(26):8253-63.
28. Prochaska JO, Velicer WF. The Transtheoretical Model of Health Behavior Change. *American Journal of Health Promotion*. 1997;12(1):38-48.
29. Hosper K, Loenen T. *Leven met ongezonde stress: Aandacht voor chronische stress in de aanpak van gezondheidsverschillen*. Utrecht: Pharos; 2021.
30. Manstead AS. The psychology of social class: How socioeconomic status impacts thought, feelings, and behaviour. *British Journal of Social Psychology*. 2018;57(2):267-91.
31. Deci EL, Ryan RM. Self-determination theory. *Handbook of theories of social psychology*. Thousand Oaks, CA: Sage Publications Ltd; 2012;1: 416-36.
32. Bandura A. *Self-efficacy: the exercise of control*. New York: Worth Publishers; 1997.
33. Frambach JM, van der Vleuten CP, Durning SJ. AM Last Page: Quality Criteria in Qualitative and Quantitative Research. *Academic Medicine*. 2013;88(4):552.
34. Eakin JM. Towards a 'Standpoint' Perspective: health and Safety in Small Workplaces from the Perspective of the Workers. *Policy and Practice in Health and Safety*. 2010;8(2):113-27.
35. Sociaal-Economische Raad. *Eigen regie op loopbaan en ontwikkeling. Kennisdocument leven lang ontwikkelen*. SER; 2020.

Supplementary files

Supplementary file 1. Interview guides

Interview guide for occupational health professional who delivered the intervention

1. What do you think of Grip on Health? Are you satisfied with the intervention?
 - a. Which part of Grip on Health is the most valuable?
 - b. Which part of Grip on Health is the least valuable?
2. What do you think of the fact that problems on multiple life domains are discussed?
3. Would you recommend this intervention to a colleague?
4. Does the intervention fit your normal way of working?
 - a. What is the added value of this intervention as opposed to your normal way of working?
5. At which organization did you implement the intervention?
 - a. Was the organization or involved employer aware of the intervention?
6. How did you reach lower SEP workers? Preventively? Or on short-term sick leave?
 - a. Was it hard to reach with this target group? If yes, why?
 - b. Do you think Grip on Health is relevant for lower SEP workers?
7. Among how many employees did you implement the intervention?
8. Did you have sufficient time to implement the intervention?
9. Which professional is most suitable to implement the intervention?
10. Did you deliver all the steps of the intervention?
 - a. If no, how many steps and which steps did you not deliver? And why?
 - b. How many conversations did you need to deliver these steps?
11. How did you discuss problems with the worker?
 - a. Did you use the materials for the discussion of problems?
 - b. Were there often problems in- or outside the workplace?
12. How did you select problems with the worker?
 - a. Did you use the materials for the selection of problems?
 - b. Where problems in- or outside the workplace selected?
13. Was there another stakeholder involved in the selection of problems?
 - a. If yes, was everyone able to discuss the problems from their own perspective and were they able to reach consensus on the most important problems?
14. Was the worker and, if involved, other stakeholder actively involved in the discussion of problems?
 - a. Was the worker able to identify problems? And which problem he or she wanted to solve?
15. How did you brainstorm about solutions with the worker?
 - a. Did you use the materials for the brainstorm of solutions?
16. Was there another stakeholder involved in the brainstorm of solutions?
 - a. If yes, was everyone able to discuss possible solutions from their own perspective and were they able to reach consensus on solutions?
17. Was the worker and, if involved, other stakeholder actively involved in the brainstorm of solutions?

- a. Was the worker able to come up with solutions themselves?
18. What did you think of the role of process leader?
 - a. Were you able to take on the role of the process leader? And not the role of the expert?
19. How did you compose an action plan with the worker?
 - a. Did you use the materials for composing an action plan?
20. Did you perform an evaluation?
 - a. If yes, how many? And did you use the materials for the evaluation?
21. Were the solutions that came out of the intervention implemented?
 - a. If yes, how did that go? And who implemented the solutions?
22. To what extent do you think that Grip on Health is effective?
 - a. If yes, on what outcomes? And in what way?
 - b. If no, why do you think the intervention is not effective?
23. What is needed to implement Grip on Health in the future?
 - a. What do you need as an occupational health professional?
 - b. What is needed from employers or occupational health services?
 - c. Which improvements are needed to the intervention itself?
24. Which factors (can) hamper the implementation of Grip on Health?

Interview guide occupational health professional who did not deliver the intervention

1. What was the reason/or were the reasons that you did not implement the intervention?
 - a. At which organization did you want to implement the intervention? And was this organization aware that you wanted to implement Grip on Health?
 - b. Did you have permission from the contracted employer to implement the intervention?
 - c. Was it hard to reach lower SEP workers preventively? If yes, why?
 - d. Does the intervention fit your normal way of working?
 - e. Do you have sufficient time to implement interventions, such as Grip on Health?
2. What do you think of Grip on Health? Are you satisfied with the intervention?
 - a. Which part of Grip on Health is the most valuable?
 - b. Which part of Grip on Health is the least valuable?
3. What do you think of the fact that problems on multiple life domains are discussed?
4. Would you recommend this intervention to a colleague?
5. What is the added value of this intervention as opposed to your normal way of working?
6. What did you think of the materials of the intervention?
7. To what extent is it feasible to organize a conversation with a worker and other stakeholder?
8. Which professional is most suitable to implement the intervention?
 - a. Are occupational health professionals able to take on the role of the process leader?
9. How do you reach lower SEP workers? Preventively? Or on short-term sick leave?
 - a. Is it hard to reach this target group? If yes, why?
 - b. Do you think Grip on Health is relevant for lower SEP workers?
10. To what extent do you think that Grip on Health is effective?
 - a. If yes, on what outcomes? And in what way?
 - b. If no, why do you think the intervention is not effective?

11. What is needed to implement Grip on Health in the future?
 - a. What do you as an occupational health professional need?
 - b. What is needed from employers or occupational health services?
 - c. Which improvements are needed to the intervention itself?
12. Which factors (can) hamper the implementation of Grip on Health?

Interview guide workers with a lower socioeconomic position

1. What was the reason that you had a conversation with (name occupational health professional)?
 - a. What kind of problems did you discuss?
2. In what way did you come in contact with the occupational health professional?
 - a. In what way would you like to get in contact with occupational health professionals? Through the supervisor? Or in another way?
3. How many conversations did you have with the occupational health professional?
4. What did you think of the discussion of problems with the occupational health professional?
 - a. Did you use the materials for the discussion of problems? If yes, did it help with the discussion of problems?
5. Were you able to discuss all your problems with the occupational health professional? Also, the problems outside the workplace?
 - a. Did you feel you could tell the occupational professional everything?
 - b. Did the occupational health professional create a safe environment to discuss your problems?
6. Which problems did you wanted to solve in the intervention?
 - a. Were you able to decide on which problems you wanted to solve?
7. Did you also discuss your problems with another person (e.g. supervisor, partner)? And with whom?
 - a. If yes, were you both able to discuss the problems from your own perspective? Did the occupational health professional make sure that you reached consensus on problems?
 - b. If no, what do you think if another person joins the conversation?
8. What did you think of the brainstorm of solutions with the occupational health professional?
 - a. Did you use the materials for the brainstorm of solutions? If yes, did it help with the brainstorm of solutions?
9. Which solutions were eventually selected to implement?
 - a. Were you able to come up with solutions? Or did you need help from the occupational health professional to come up with solutions?
10. Did you also discuss solutions with another person? And with whom?
 - a. If yes, were you both able to brainstorm about solutions from your own perspective? Did the occupational health professional make sure you reached consensus on solutions?
 - b. If no, would you like another person to join the conversation to brainstorm about solutions with you?
11. Did you compose an action plan for the solutions?
 - a. Did you use the materials for composing an action plan? If yes, did it help with composing an action plan?

12. Were actions in the action plan implemented?
 - a. If yes, who implemented the actions? Did you use the action plan?
13. Did you evaluate the action plan with the occupational health professional?
 - a. Did you use the materials to evaluate the action plan? If yes, did it help with the evaluation?
 - b. Was it needed to adjust the action plan?
14. What did you think of the Grip on Health intervention?
 - a. Were you satisfied with the conversations?
 - b. Which part of Grip on Health was the most valuable?
 - c. Which part of Grip on Health was the least valuable?
15. What did you think of the occupational health professional?
 - a. To what extent were you satisfied with the occupational health professional?
 - b. Did the occupational health professional sufficiently support you in solving problems?
16. Were your problems solved or reduced?
 - a. If yes, which problems, in- and/or outside the workplace?
17. Did you feel that the intervention was useful/relevant for you? If yes, in what way?
18. Which part of the intervention helped you the most?
19. Which part of the intervention would you like to change?

Supplementary file 2. Checklist Grip on Health

Checklist for occupational health professional who delivered the intervention

1. **Is the employee a man or a woman?**

Man

Woman

2. **How old is the employee?**

Younger than 35 years

35-55 years

Older than 55 years

3. **Does the employee have one or more of the following chronic diseases?**

Multiple answers possible

No chronic disease

Musculoskeletal disease (e.g. osteoarthritis)

Stomach or intestinal disorder

Mental illness (e.g. anxiety disorder, burnout)

Neurological condition (e.g. MS)

Diabetes

Cardiovascular disease

Respiratory disease (e.g., COPD, asthma)

Other chronic diseases, namely:

4. **What kind of work has the employee?**

Briefly describe the profession of the employee

5. **How many hours does the employee work per week?**

Number of hours per week according to contract

Number of hours currently working per week
if the employee is on sick leave

6. **What was the reason for the conversation?**

Multiple answers possible

Working conditions consultation hour (preventive)
Absenteeism consultation hour (self-registered)
Absenteeism consultation hour (invited by professional)
Otherwise, namely:

7. **In case the employee is on sick leave, how many weeks?**

Weeks:

8. **Which of the following steps have been delivered (or at least partly delivered)?**

	Yes	No, why not?
Step 1: Inventory – discuss potential problems on multiple life domains		
Step 2: Research – prioritize problems and discuss the causes and consequences of these problems		
Step 3: Summary – select the most relevant problems		
Step 4: Problem analysis – reach consensus on the most important problems		

9. **Did the employee have problems in- or outside the workplace?**

	Yes	No
Problems in the workplace		
Problems outside the workplace		

10. **In case there were problems in the workplace, what kind of problems were discussed?**

Multiple answers possible

	Yes	No
Problems related to job content		
Problems related to working environment		
Problems related to working conditions		
Physical health problems in the workplace		
Mental health problems in the workplace		
Lifestyle related problems in the workplace		
Socially related problems in the workplace		
Otherwise, namely:		

11. **In case there were problems outside the workplace, what kind of problems were discussed?**

Multiple answers possible

	Yes	No
Physical health problems outside the workplace		
Mental health problems outside the workplace		
Lifestyle related problems outside the workplace		
Socially related problems outside the workplace		
Otherwise, namely:		

12. **Which of the following steps have been delivered (or at least partly delivered)?**

	Yes	No, why not?
Step 5: Brainstorm – brainstorm about possible solutions		
Step 6: Solution analysis – reach consensus on solutions		
Step 7: Action plan – compose an action plan to implement solutions		
Step 8: Evaluation – evaluate the plan of action		

13. **Have solutions been formulated for problems in- or outside the workplace?**

If you did not formulate solutions with the employee, you can skip this question.

	Yes	No
For problems in the workplace		
For problems outside the workplace		

14. **Which solutions have been formulated, are solutions implemented and who implemented the solutions?**

If you did not formulate solutions with the employee, you can skip this question.

Which solution has been formulated? <i>Briefly describe the solution</i>	Is the solution implemented? <i>Yes/no</i>	Who implemented the solution?

15. **How many conversations did you have with the employee?**

Number of conversations:

16. **When did the first and last conversation take place?**

Date first conversation:

Date last conversation:

17. **Did a conversation with another stakeholder take place (e.g. supervisor, partner)?**

Yes	No	If yes, which stakeholder?

18. **How satisfied are you with the process of these conversations with regard to this employee?**

Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied

19. **How satisfied are you with the effectiveness of these conversations with regard to this employee?**

Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
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20. **How satisfied do you think the employee is with these conversations?**

Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
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21. **To what extent has Grip on Health contributed to improving the health of this employee?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

22. **To what extent has Grip on Health contributed to improving the work functioning of this employee?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

23. **To what extent has Grip on Health contributed to improving the working conditions of this employee?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

24. **To what extent has Grip on Health contributed to improving the living conditions of this employee?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

25. **Which problems have been solved?**

None These problems (provide a brief explanation):

26. **To what extent has Grip on Health contributed to improving the self-control of this employee?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

27. **To what extent has Grip on Health supported this employee in solving problems?**

Not at all	A little bit	To a fair extent	To a great extent	To a very great extent	Not applicable
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Provide a brief explanation here:

28. **To what extent have all formulated solutions been implemented?**

All solutions	Most solutions	A reasonable part of the solutions	A small part of the solutions	None of the solutions	Not applicable
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29. **In case of sick leave, do you think that Grip on Health (partially) decreased the duration of sick leave for this employee?**

Yes	No	Not applicable: employee was not on sick leave
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30. **In case of no sick leave, do you think that Grip on Health (partially) prevented sick leave for this employee?**

Yes	No	Not applicable: employee was on sick leave
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31. **If you have any remarks about Grip on Health or this questionnaire, you can leave them below.**

Supplementary file 3. Codebook process evaluation components

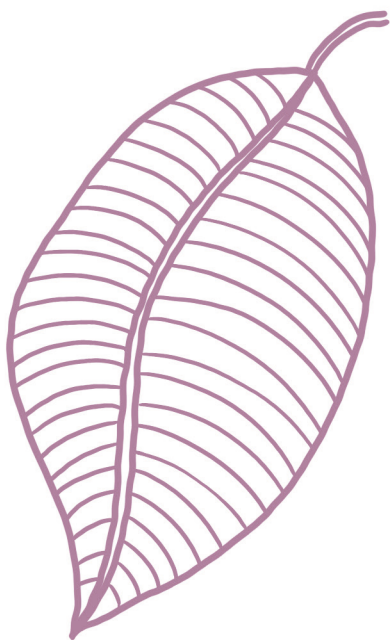
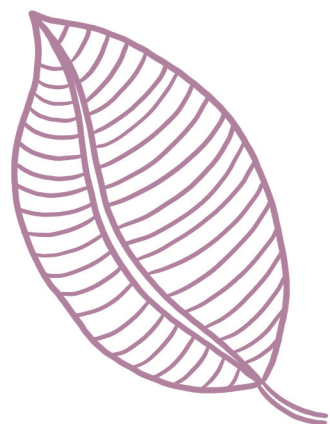
Process evaluation component	Sub-codes occupational health professionals	Codes occupational health professionals
Reach	Reaching workers with a lower socioeconomic position	To preventively reach lower SEP workers is not difficult
		To preventively reach lower SEP workers is difficult
	Reasons for not reaching workers with a lower socioeconomic position	Workers do not always want help or ask for help
		Employers focus too much on sick leave, and not on prevention
		Absenteeism consultation hardly used
		Occupational health professionals/occupational health services are not physically present at the organizations
	Ways of reaching workers with a lower socioeconomic position	Prevention part of occupational health examination
		Visible and accessible occupational health professionals
		Workers invited for a consultation on request of the employer
		Occupational health professional physically present at organization
Who can receive the intervention	Problems on multiple life domains more prevalent among workers with a lower socioeconomic position	
	Problems on multiple life domains prevalent among all workers	
	Implementation intervention not only among workers with a lower socioeconomic position	

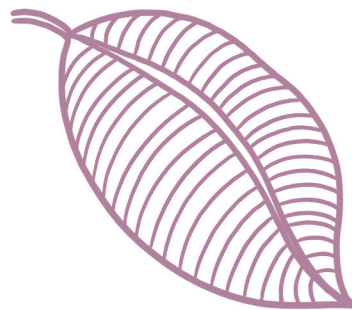
Process evaluation component	Sub-codes occupational health professionals	Codes occupational health professionals
	Who can deliver the intervention	<p>Intervention can be provided by any type of occupational health professional</p> <hr/> <p>Intervention suitable for occupational nurses/ social workers/ work ability specialists</p> <hr/> <p>Intervention suitable for professionals outside occupational health care</p> <hr/> <p>Intervention suitable for professionals that do not discuss problems on multiple life domains</p> <hr/> <p>Occupational physicians lack time</p>
Dose delivered	Sufficient time to deliver the intervention	<p>Grip on Health comparable to normal way of working</p> <hr/> <p>Permission from occupational health service/ employer</p> <hr/> <p>No permission needed from occupational health service/employer</p> <hr/> <p>Trust from employer to organize their own time</p> <hr/> <p>Intervention can be delivered among employers who recognize the added value of prevention and sustainable employability</p>
	Insufficient time to deliver the intervention	<p>Discussion of multiple life domains can take a lot of time</p> <hr/> <p>Permission needed from occupational health service/employer</p>
Fidelity	Problem on multiple life domains	Problems on multiple life domains discussed
	Relevant stakeholders involved	<p>Conversation with supervisor</p> <hr/> <p>Conversation with stakeholders from outside the workplace</p> <hr/> <p>Advantages conversation with another stakeholder</p> <hr/> <p>Conversation with another stakeholder (not) part of normal way of working</p>

Process evaluation component	Sub-codes occupational health professionals	Codes occupational health professionals
	No relevant stakeholders involved	No conversation with supervisor Supervisors do not have conversations with workers Conflict between worker and supervisor Supervisors conduct preventive conversations with workers Supervisors unavailable/lack time Supervisors are notified on what is discussed Consultations were online/not physically at organizations Disadvantages conversation with another stakeholder No conversation with stakeholders from outside the workplace Refer a worker to a stakeholder from outside the workplace Request of information stakeholder from outside the workplace Disadvantages conversation with partner
Quality of delivery	Role of process leader	Role of process leader difficult Role of process leader not difficult Role of process leader is possible, but workers with a lower socioeconomic position need support
	Self-control of workers with a lower socioeconomic position	Difficult for workers with a lower socioeconomic position to take on an active role Difficult for workers with a lower socioeconomic position to identify problems and solutions Workers with a lower socioeconomic position do not take self-control/self-control is difficult Workers identify problems and solutions Precondition for self-control is being open to see their own role

Process evaluation component	Sub-codes occupational health professionals	Codes occupational health professionals
	Conversation with another stakeholder	<p>Guaranteed a safe and confidential environment</p> <p>Equality and reached consensus on problems and solutions</p> <p>Precondition is a good relationship between a worker and supervisor</p>
Responsiveness	Opinion about the intervention and the materials of the intervention	<p>Intervention is structured, clear</p> <p>Intervention is comparable to their normal way of working</p> <p>Intervention is relevant for workers with a lower socioeconomic position</p> <p>Helpful tool/helpful materials to conduct conversations</p> <p>Visual materials of the intervention helpful</p> <p>Positive about visual aspect of the materials</p> <p>Mainly used visual map</p> <p>Materials too difficult for workers with a lower socioeconomic position</p>
	Perceived effectiveness intervention	<p>Intervention effective on health, functioning, sick leave, solving problems</p> <p>Intervention led to more awareness on health</p> <p>Intervention led to small and practical solutions</p> <p>Effective results depend on whether the worker sees his/her own role and willingness to change</p> <p>Effective results depend on external factors in- or outside the workplace</p>
Program differentiation	Parts of the intervention that contribute to positive effects	<p>Intervention provides an overview of all life domains</p> <p>Visual materials/structured method provides more insight into problems and solutions</p> <p>Worker takes on an active role, which improves self-control</p>

Process evaluation component	Sub-codes participants	Codes participants		
Quality of delivery	Self-control of workers with a lower socioeconomic position	Worker was able to identify problems		
		Worker was able to identify solutions		
		Occupational health professional supported worker in identifying and solving problems		
		Occupational health professional identified solutions		
	Opinion about process leader	Satisfied with conversations/occupational health professional		
		Worker felt understood in the conversations		
		Occupational health professionals listened to problems		
		Safe and confidential environment		
	Conversation with another stakeholder	Equality between worker and supervisor		
		Conversation with supervisor was useful		
Responsiveness	Opinion about the intervention and materials of the intervention	Satisfied with conversations		
		Intervention is structured		
		Intervention helpful to discuss problems		
		Materials helped to discuss problems		
		Materials were clear		
	Perceived effectiveness intervention	Conversations were useful		
		Conversations had a positive effect on health		
		Conversations had a positive effect on work functioning		
		Conversations had a positive effect on private situation		
		Intervention led to small and practical solutions		
		Worker became more aware of problems		
		Program differentiation	Parts of the intervention that contribute to positive effects	More insight into problems
				Self-control of worker is improved
Visual materials provided more insight into problems				





Chapter 5

A context analysis with stakeholders' views for future implementation of interventions to prevent health problems among employees with a lower socioeconomic position

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Abstract

Purpose: Health problems among employees with a lower socioeconomic position (SEP) often result from an interplay of problems on multiple life domains. Contextual factors greatly affect implementation of interventions that aim to solve these types of problems. The aim of this study was to gain insight into the organizational and socio-political context for implementation of preventive interventions that consider multiple life domains among employees with a lower SEP.

Methods: In total 16 semi-structured interviews were conducted with stakeholders at organizational level, occupational health service (OHS) level, and at socio-political macro level. Thematic analysis was performed to identify themes that describe the perceptions of stakeholders about the impact of contextual factors on implementation.

Results: The following themes were identified: (1) the importance of addressing problems on multiple life domains among employees with a lower SEP, (2) unclarity of responsibilities for solving problems on multiple life domains, (3) necessity of better collaboration between occupational and curative healthcare, (4) insufficient investments in prevention by employers, (5) difficulties in early identification of employees at risk for health problems, and (6) risk of conflicting role for supervisors in addressing problems on multiple life domains.

Conclusions: Implementation of preventive interventions considering multiple life domains among lower SEP employees is challenging, due to various contextual factors. To improve the feasibility, many different stakeholders both in- and outside occupational health practice need to be involved, collaborate, and need to be convinced of the added value to prevent problems on multiple life domains among employees with a lower SEP.

Keywords: Employees; Lower Socioeconomic Position; Intervention; Prevention; Implementation Science.

Introduction

In developed countries there are important health differences between people with a lower and higher socioeconomic position (SEP)(1), which is determined by occupation, education and/or income (2). People with a lower SEP have a higher risk for health problems, which negatively affects their work participation and increases their risk for premature dropout from the labor market (3, 4). This points out the importance of preventive interventions that actively support employees with a lower SEP to solve their health problems, who are defined as workers with manual labor (e.g. construction worker) or with lower educated and/or lower income occupations (e.g. administrative worker or truck drivers). In the past decades, many interventions have been developed to prevent health problems among employees with a lower SEP(5,6,7,8). These interventions mainly focused on work and lifestyle related health problems, while health problems among employees with a lower SEP often result from an interplay of problems on multiple life domains, such as unfavorable psychosocial factors and unhealthy living conditions(2, 9, 10).

A complex interplay of problems among employees with a lower SEP, asks for an intervention that can tackle multiple problems in various life domains. For this, the Grip on Health intervention was developed to support employees with a lower SEP to improve their health from a broader perspective, and thereby prevent health problems. This intervention is based on the Participatory Approach (PA)(11) and identifies and solves problems on multiple life domains that affect healthy functioning at work. The current study builds on a pilot study in which the Grip on Health intervention was implemented in occupational health practice and the implementation process was evaluated (not published yet).

The process evaluation focused on factors on the level of the intervention itself (i.e. design and content of the intervention) and the users of the intervention (i.e. employees who received the intervention, and occupational health professionals (OHPs) who facilitated the intervention). The results of the process evaluation showed that the intervention was perceived as relevant by the users of the intervention, but difficult to implement in practice. The next step is to investigate contextual factors (i.e. organizational and socio-political factors)(12, 13). This can provide more insight into the implementation process of preventive interventions that takes into account multiple life domains among employees with a lower SEP. Research shows that implementation is much more dependent on contextual factors, as opposed to the design and content of interventions (14,15,16). Contextual factors are less easy to adjust or influence, and therefore require careful consideration prior to implementation. This means that the implementation of interventions often requires a system approach(17, 18), wherein

the complexity of structures and systems in occupational health practice are taken into account. Therefore, this study examined the organizational and socio-political context for implementation of preventive interventions that consider multiple life domains among employees with a lower SEP, and explored contextual factors that affect implementation of these type of interventions.

Methods

Study Design

This study used a qualitative, explorative design to obtain in-depth information on the organizational and socio-political context for implementation of preventive health interventions that consider multiple life domains among employees with a lower SEP. The information was obtained by conducting semi-structured interviews among different stakeholders in the organizational and socio-political context of occupational health practice. The Medical Ethics Committee of the VU University Medical Center approved the study protocol and decided that the Medical Research Involving Human Subjects Act does not apply to this study. All stakeholders signed informed consent before participation.

Context

In the Netherlands, The Working Conditions Act forms the basis for general rights and duties for employers and employees to ensure a safe and healthy working environment. All employers have the obligation to seek support on health and safety from OHPs, that provide professional advice and guidance for a safe and healthy working environment (19). In case of long-term sickness absence of an employee (more than 6 weeks) there is a legal obligation for employers to ask for professional advice from an occupational physician (OP). Also, not sick listed employees have the possibility by law (Working Conditions Act) to ask for advice from an OP without permission from their employer. Furthermore, employers are obligated to offer employees an occupational health examination and evaluate the risks for health and safety at the workplace. OHPs can either be self-employed or employed by occupational health services (OHSs). OHSs or self-employed OHPs offer various types of contracts to employers, such as rather basic contracts in which only advice is provided on a single occasion at the request of the employer, up to contracts with continuous in-house services of multiple OHPs. Moreover, employers can also have an in-house OHS. The Works Council or employees' representatives must approve the content of contracts with the OHS. In practice, the content of these contracts varies widely, however there are still employers that do not fulfill the Working Conditions Act or do not have any contract at all (20, 21).

In summary, employers and employees are both responsible for healthy and safe working conditions in an organization. Sometimes employees in an organization are represented by a Works Council or employee representative. Employers and employees receive advice from OHPs and OHS managers on how to achieve a healthy and safe working environment. OHPs and employers are represented by OHPs associations and employer associations. There are also trade organizations that inform and support employees, employers, OHPs and/or OHSs. Evidently, employees can also visit a health professional in curative healthcare (e.g. general practitioner (GP)), and these professionals are also represented by associations. Relevant stakeholders in (occupational) health practice in the Netherlands are shown in Figure 1.

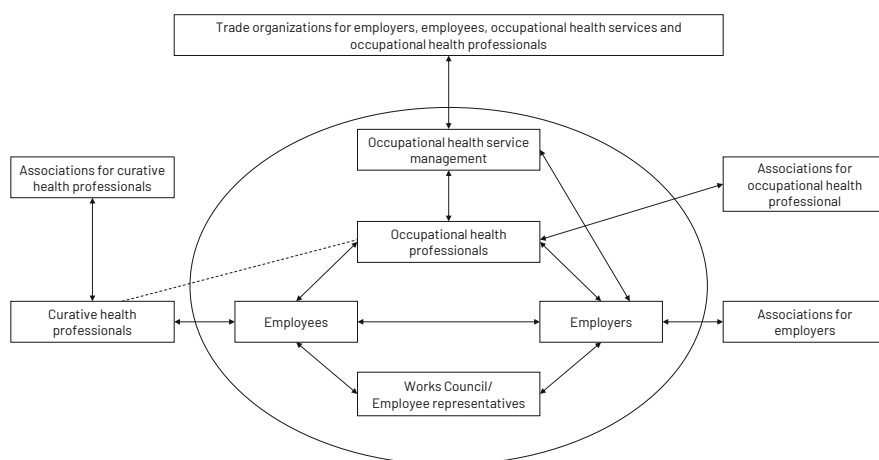


Figure 1. Relevant stakeholders in (occupational) health practice in the Netherlands

Recruitment

Stakeholders were selected within the organizational and socio-political context of occupational health practice in the Netherlands and were divided in three types of levels; (1) organizational level, (2) OHS level and (3) socio-political macro level. The organizational level contains stakeholders that work for an organization or company with lower SEP employees and focus on improving and maintaining the health and safety of employees in an organization (e.g. human resource manager or manager health and safety). The OHS level contains stakeholders that work for an OHS (e.g. manger OHS) and focus on supporting organizations in achieving a healthy and safe working environment. The socio-political macro level contains stakeholders that work for an organization that provides support or advice on healthy and safe working conditions at a higher level than stakeholders working for an OHS (e.g. representative of trade association). Stakeholders at

organizational level are part of the organizational context, and stakeholders at OHS and socio-political macro level are both part of the socio-political context of occupational health practice. To recruit stakeholders on different levels, we used a combination of purposive and snowball sampling. For purposive sampling, stakeholders needed to have a profession related to occupational health (e.g. manager health and safety) and they must represent a relevant stakeholder in occupational health practice in the Netherlands, as shown in Fig. 1. Stakeholders meeting the predefined criteria were approached by using existing contacts of the research team—i.e. snowball sampling. Stakeholders were invited by email and provided with a short description of the aim of the study. If stakeholders had additional questions about the study, the primary researcher (RS) answered these questions during the interview. In total, 16 semi-structured interviews were conducted; three with stakeholders at organizational level, four with stakeholders at OHS level and nine with stakeholders at socio-political macro level (see Table 1).

Table 1. Stakeholders

Levels	Stakeholders
Organizational level	HR manager logistic company
	HR advisor facility department hospital
	Manager health and vitality steel company
Occupational health service level	Department coordinator occupational social workers
	Department coordinator occupational nurses
	Two managers of an occupational health service
Socio-political macro level	Policy officer Netherlands Trade Union Confederation
	Board member Royal Dutch Medical Association
	Representative guideline development & research Dutch College of General Practitioners
	Board member Dutch Association of occupational labor experts
	Two policy officers Confederation of Netherlands Industry and Employers
	Board member Netherlands Society of Occupational Medicine
	Board member trade association for service providers of occupational health care
	Three policy officers trade association for organizations in the construction sector
	Representative trade association for service providers of occupational health care

Data Collection

Semi-structured interviews were conducted by telephone or videoconference between May and November 2020. A topic guide was used to examine the perceptions of stakeholders on preventive health interventions that consider multiple life domains and to explore related contextual factors. The following topics were discussed: (1) addressing problems on multiple life domains in occupational health practice (2) how problems on multiple life domains are dealt with and which stakeholders play a role in dealing with these problems; (3) the extent to which prevention is important in occupational health practice, (4) the implementation of preventive services in organizations; (5) collaboration between organizations, OHSs and OHPs in occupational health practice; (6) the organization of occupational healthcare in the Netherlands in relation to addressing problems on multiple life domains; and (7) the collaboration between occupational healthcare and curative healthcare. Within these topics, questions were based on contextual factors that could affect implementation, which were identified by Fleuren et al. (12). Furthermore, in case employees with a lower SEP were discussed within these topics, this group of employees were conceptualized as workers with blue-collar occupations or a lower educational level, who more often have health problems on multiple life domains and an increased risk to drop out of the labor market, as compared to workers with white-collar occupations or a higher educational level. For each stakeholder the interview topics were the same, but questions were stakeholder-specific to align the questions to the profession and background of the stakeholder. Interviews lasted around 30–60 min and were conducted in Dutch by the primary researcher (RS).

Data Analysis

The interviews were audiotaped and transcribed verbatim. The data was coded using Atlas.ti. Thematic analysis was used to analyze the data (22). The analysis started with re-reading the transcripts, listening to audiotapes, and making summaries of each transcript to become familiar with the data. Thereafter, open coding of the transcripts was performed using an inductive approach. During this process an initial list of codes was produced by the first coder (RS). Another coder (FS) read several transcripts and checked the codes. Next, the data was searched for similarities and discrepancies to combine and group codes. There were several meetings to discuss and categorize the codes into sub-themes (RS, FS, MH). This ultimately resulted into broader themes, which were depicted in code matrices. After 12 interviews, the themes were discussed with the whole research team (RS, FS, MH, CB, JA), wherein we came to the conclusion that we did not yet achieve data saturation. Some underlying factors influencing implementation were still unclear and it became clear that trade associations were an important stakeholder that were not yet interviewed. Therefore, four extra interviews, of which three with representatives of trade associations, were

additionally performed to achieve data-saturation. Open coding was performed for the additionally performed interviews. Another coder (AB) also read several transcripts and checked the codes. The remaining steps were repeated to adjust and finalize codes, (sub-)themes and code matrices. Moreover, sub-themes were categorized according to stakeholder level, which provided an overview of similarities and discrepancies between stakeholder levels for the different sub-themes. The last stage consisted of meetings with the whole research team to reach consensus on the final themes.

Results

Themes were identified on the perceptions of stakeholders on the impact of the organizational and socio-political context for implementation of preventive health interventions that consider multiple life domains among employees with a lower SEP. These themes also include contextual factors that may facilitate or impede implementation in occupational health practice. The different themes and related contextual factors are presented in Table 2 and discussed below. An overview of themes, sub-themes and codes can be found in the supplementary files, wherein the stakeholder level that endorsed a sub-theme was also described.

Table 2. Overview of themes and related contextual factors

Theme	Contextual factors
The importance of addressing problems on multiple life domains among employees with a lower SEP	<ul style="list-style-type: none"> • Problems on multiple life domains are recognized among employees with a lower SEP • Addressing problems among employees with a lower SEP requires more attention • Difficulty to solve problems on multiple life domains among employees with a lower SEP • Employees with a lower SEP are hard to reach for participation in preventive interventions

Table 2. Overview of themes and related contextual factors

Theme	Contextual factors
Unclarity of responsibilities for solving problems on multiple life domains	<ul style="list-style-type: none"> • Low sense of responsibility experienced in occupational health services • Employers eventually determine the content of occupational services provided • Employers who see their employees as valuable feel responsible • Employers with sufficient resources feel responsible • Employers of employees with a lower SEP do not always act in the interests of employees • Low sense of responsibility experienced in small and medium sized enterprises • Limited influence of employees with a lower SEP on occupational health policies • Low sense of responsibility experienced in occupational and curative healthcare
Necessity of better collaboration between occupational and curative health care	<ul style="list-style-type: none"> • Two separate options to discuss problems on multiple life domains • Lack of collaboration between occupational and curative healthcare • Collaboration between occupational and curative healthcare is perceived difficult
Insufficient investments in prevention by employers	<ul style="list-style-type: none"> • Prevention of health problems and (long-term) sick leave is an important priority • Lack of attention for prevention in contracts • Less resources for prevention in smaller organizations or organizations in a crisis • Employers not seeing their employees as valuable invest less in prevention • Results of prevention are often unclear and cannot always be quantified • Employers focus on short term results and only act in case there are problems • Employers without support from key stakeholders in organizations difficult to convince to invest in prevention

Table 2. Overview of themes and related contextual factors

Theme	Contextual factors
Difficulties in early identification of employees at risk for health problems	<ul style="list-style-type: none"> • Methods for the identification of employees at risk mainly focus on indicated prevention • Limited availability of occupational physicians to preventively address problems on multiple life domains • Occupational social workers or occupational nurses more accessible than occupational physicians to preventively address problems on multiple life domains • Organizations not always willing to invest in preventive conversations with occupational health professionals or in preventive interventions
Risk of conflicting role for supervisors in addressing problems on multiple life domains	<ul style="list-style-type: none"> • Supervisors play an important role in the early identification of workers at risk for health problems • Supervisors play an important role in referring employees to an OHP on time • Supervisors discussing problems on multiple life domains may disadvantage employees • Privacy regulations to discuss problems on multiple life domains are unclear

The Importance of Addressing Problems on Multiple Life Domains Among Employees with a Lower SEP

The majority of the stakeholders recognized that employees with a lower SEP more often have problems on multiple life domains, as opposed to employees with a higher SEP. Although, several stakeholders representing all three levels described that employees with a higher SEP also encounter problems on multiple life domains, it was more important to address these problems among employees with a lower SEP. Employees with a lower SEP more often have unhealthy working and living conditions, and other problems in- and outside the workplace, such as unhealthy lifestyles or financial problems. Problems pile up and could further accumulate if not addressed on time, which makes it even harder to solve problems. As a result, stakeholders at all three levels described that employees with a lower SEP risk ending up in a negative spiral, wherein one problem perpetuates another problem, or one problem makes it difficult to solve another problem.

S9 (socio-political macro level): "Yes, it more often leads to problems, in particular because it is not one aspect, it is often an accumulation of, and then lifestyle has a more negative effect. And there are more things that make them vulnerable, and these things are also interrelated. So lifestyle can be hard, because they may need an investment or money to solve that, and if you have a low income or struggling to

make ends meet, than you will not work on that (lifestyle), while your health is getting worse, and with a worse health they may find it difficult to get a job, you can see that the vicious cycle arises”.

The majority of the stakeholders expressed that employees with a lower SEP need more support in case they have problems on multiple life domains. Some stakeholders representing all three levels mentioned that this group of employees experience difficulties with finding the right health professional to support them in solving their problems, as there are many different professionals working at different health organizations. Some stakeholders at socio-political macro level stated that it is more difficult for them to get an overview of their problems on multiple life domains. Another stakeholder of an OHS described that they need more support, as they are less surrounded with people in their environment in- and outside the workplace that can help to solve their problems.

S5(OHS): “Often they do not see a solution and they are in their own bubble, but that occurs to everyone, the moment that you are completely in your own bubble, then you cannot look beyond that bubble, and yes, the moment that you are regularly stimulated by your colleagues and your relatives to achieve behavioral change, well then you start thinking about that. In this group you often see that such stimulus does not come from the environment, because everyone is in the same type of bubble.”

Several stakeholders representing all three levels mentioned that employees with a lower SEP are difficult to reach for participation in preventive health interventions. Stakeholders at organizational and socio-political macro level mentioned that employees with a lower SEP do not easily ask for help and do not like to talk openly about their problems, due to for example mistrust in the workplace, or a certain group dynamic or culture at the workplace to keep on going, and not to complain. Though, some stakeholders at socio-political macro level stated that employees in general don't see the added value to participate in preventive health interventions when they do not experience any health complaints.

Unclearly of Responsibilities for Solving Problems on Multiple Life Domains

All stakeholders of an OHS expressed not being responsible to solve problems on other life domains than work. OHSs stated that these types of problems are discussed by OHPs, but no actions are taken to actually solve these problems. Many stakeholders, including OHSs themselves, indicated that OHSs are commercial organizations that sell services to employers related to work and health issues, and that the content of OHSs services are eventually determined by the employer. Some stakeholders representing all three levels mentioned that

services from OHSs are mainly perceived as an advice and that OHPs are seen as advisors for employers:

S7(OHS): "But we have a responsibility to give the right advice to both the employer and the employee. So, we have, it might be good for you to realize that we have obviously as an occupational health service, we do not have care tasks like a hospital. It is actually, an occupational health service is not a healthcare facility, and we deliver business-to-business services. We deliver services to an employer that happen to be care related, and as an occupational health physician you have a legal obligation to deliver care, but in fact, it is mainly an advice what you deliver."

Several stakeholders, including stakeholders at organizational level, mentioned that some employers feel a responsibility to solve problems outside the workplace. Some of these stakeholders stated that these types of employers see their employees as valuable. Feelings of responsibility by employers, increases the opportunity to deal with problems outside the workplace (e.g. sleep workshops) and facilitate solutions that are provided by external services or interventions (e.g. support for financial problems). A few stakeholders stated that mainly large organizations with sufficient resources facilitate solutions, which are offered in the form of a menu (e.g. lifestyle interventions, support from a psychologist or social worker) where employees can choose from. Smaller organizations may experience difficulties with the funding of solutions for problems outside the workplace:

S4 (OHS): "but my first reaction would be just a lack of resources, or at least the choice to use these resources for this. I think it is easier for large companies, that financing is simply easier".

Several stakeholders at OHS and socio-political macro level stated that there are also employers not feeling responsible to solve problems outside the workplace. Some of these stakeholders mentioned that this is especially true for employers of employees with a lower SEP, who do not see their employees as valuable and are putting economic interests first. Some of these stakeholders also mentioned that some employers quickly point to problems outside the workplace as a main cause for sick leave. Stakeholders representing small and medium sized enterprises (SMEs) stated that employers of SMEs in general do not feel responsible to solve problems on multiple life domains, but that it is the responsibility of the OHS or employees themselves. A SME employer does not have much expertise on health-related problems, and therefore completely relies on the services of an OHS:

S12 (socio-political macro level): "In general you must say that the willingness to pay for that themselves is very low, because the entrepreneur thinks it is not their

responsibility, but the responsibility of the external, and last but not least from the employee himself.”

Some other stakeholders representing an organization and GPs also stated that eventually employees are responsible to solve their own problems, and that employers or OHPs can only offer tools. Some stakeholders at socio-political macro level mentioned that the extent to which an employer acts in the interest of their employees is dependent on the influence of employees on occupational health policies in organizations. One stakeholder representing OPs in the Netherlands stated that in organizations with a vast majority of lower SEP employees, employees have a limited influence and are often poorly represented. Consequently, these types of employers have less attention to solve problems on other domains than work:

S13 (socio-political macro level): “What I see is that the higher educated people are, the more empowered the employees are, the more actively they play a role in organizational policies, so influencing how it happens, the better these types of questions are considered. So yeah, people with a lower SEP, often lower educated, I have collected some examples over the course of 30 years that I am an occupational physician, and it were always the lower educated, often people with an immigrant background, sometimes with a small language problem, lower skilled positions, those were often treated the worst.”

Several stakeholders at socio-political macro level expressed that neither occupational nor curative healthcare feels responsible to solve problems on multiple life domains. A few stakeholders at socio-political macro level stated that OPs must focus on solving work-related problems, and one stakeholder representing GPs stated that GPs must focus on solving health complaints. Several stakeholders described that GPs have limited expertise and time to discuss work-related problems. Therefore, one stakeholder representing GPs suggested that general practice nurses have more time and may be more suited to solve these problems in curative healthcare. Last, all representatives from trade associations expressed not feeling responsible to solve problems on multiple life domains, they only give advice or share knowledge with employers, OHSs and OHPs.

Necessity of Better Collaboration Between Occupational and Curative Healthcare

There are two options to discuss problems on multiple life domains, either through occupational healthcare or curative healthcare. Some stakeholders representing GPs and OPs in the Netherlands struggled with the fact that occupational healthcare is separated from curative care. OPs are paid by employers and feel that they are positioned outside the curative healthcare system, making the

collaboration between occupational and curative healthcare difficult, as was experienced by many more stakeholders:

S9(socio-political macro level): "But we see the problem that occupational medicine, and also insurance medicine, that they are now completely separate, so in terms of financing and other such, this will cause problems in terms of collaboration, collaboration with a general practitioner or with anyone else. So, given the implementation of care, being able to collaborate, it is an obstacle how it is currently organized. And this is what we mean. So, we actually aim for de-separation and to work towards integrated care."

The majority of the stakeholders pointed out that problems on multiple life domains can usually be discussed at the workplace. For this, an open and safe culture within the organization is essential, as was stated by some stakeholders representing trade associations. Other stakeholders at OHS and socio-political macro level also mentioned that problems on multiple life domains can or should be discussed in curative healthcare. To actually solve these problems many stakeholders stressed the importance for a better collaboration between occupational and curative healthcare. Collaboration is needed because several stakeholders at OHS and socio-political macro level indicated that GPs are often the first or only health professionals to contact in case of health complaints, especially for employees who are self-employed and cannot contact an OHP through their employer. But GPs do not always consider the relation between health complaints and work and do not always know how to collaborate with OPs:

S8(socio-political macro level): "The collaboration between the general practitioner and occupational physician really needs to be improved and employees often go, also completely justified, first to their general practitioner when they have health complaints, and a general practitioner is often, how do you say that, unable to recognize what's going on considering their job. So, the collaboration between the occupational physician and general practitioner must be improved and the collaboration, if it happens, will also be of benefit for the employee."

The possibilities for improving the collaboration between occupational and curative healthcare that were suggested by many stakeholders focus on integrated care. Some stakeholders mentioned that we should organize healthcare around an individual employee (network care), others mentioned that we should integrate an OP in curative healthcare, or that work factors should be taken into account in curative healthcare.

Insufficient Investments in Prevention by Employers

The majority of the stakeholders acknowledged that prevention of health problems and (long-term) sick leave is an important priority. However, some stakeholders also mentioned that much more attention is needed for prevention than currently is the case, also in the education of health professionals. Several stakeholders, including trade organizations themselves, mentioned that trade organizations can play an important role in increasing the attention for prevention in organizations. Preventive services that are offered in an organization depend on the contracts between an employer and OHS. Several stakeholders representing all three levels described that preventive services are often not included in the basic contracts, and that basic contracts mainly focus on the guidance of employees on long term sick leave:

S8 (socio-political macro level): "The occupational health service or the occupational physician, they have a contract with the employer, only within that contract there is actually very little arranged in the field of prevention, unfortunately it is mainly about the guidance of employees on sick leave, while we would like to see that prevention is also part of that contract, only that happens far too little and we think that's a shame."

In addition, some stakeholders representing trade organizations stated that there is less attention for prevention in contracts due to the Gatekeepers Act. This law shifted the attention from prevention to the guidance of employees on sick leave. Another reason, mentioned by some stakeholders representing OPs, is that OHPs are not always involved in the formation contracts between an OHS and employer. OHPs that are more involved in this process are more likely to be used for preventive services in organizations.

Stakeholders described several reasons for employers to spend money on prevention. According to the majority of the stakeholders, financial resources play a major role in the decision to implement preventive services. Smaller organizations or organizations in an economic crisis (e.g. due to the Covid-19 pandemic) have less resources (time and money) to invest in preventive services. As a result, employers first invest in services that focus on the guidance of employees on long term sick leave. Second, stakeholders mentioned that employers who do not see their employees as valuable, also tend to invest less in prevention. Third, the extent to which the results of prevention are visible and provide a return on investment is also important for the majority of the stakeholders. But, the results of prevention are often unclear, and these results cannot always be quantified, making it hard to convince employers to invest in prevention. Fourth, some stakeholders at OHS and socio-political macro level stated that employers focus on short term results as they are not or less aware

of the benefits of prevention on the longer term. Several stakeholders at socio-political macro level do not agree with that, as they mentioned that is not a matter of not knowing the benefits, but a matter of employers not wanting to invest in prevention:

S13 (socio-political macro level): "It is a kind of primarily human behavior that we struggle to distinguish long term goals from short term investments. You see it everywhere, even in the whole establishment of prevention. We have a ministry of health, but nearly 100 billion is going to curative healthcare and very little is going to preventive care. I always say, you can also see it in society, if your house is on fire then the fire fighters come, and we all pay for it, that is publicly funded, so curative. But if the same fire fighter rings the doorbell the night before the big fire and says: can I give you some advice about escape routes and other things, then you have to pay for it yourself. It is very complicated and apparently, we have the tendency to see the dangers and then pay for it."

Several stakeholders at socio-political macro level stated that we need to work out business cases and develop innovative preventive services to convince employers to invest in prevention. At last, several stakeholders explained that the amount of support from key stakeholders in organizations for prevention (e.g. supervisor, HR manager) is just as important. If there is no support from key stakeholders for prevention, it was mentioned that it is very hard to convince employers to invest in prevention.

Difficulties in Early Identification of Employees at Risk for Health Problems

The majority of the stakeholders mentioned that methods for the identification of employees at risk mainly focus on indicated prevention (i.e. target high risk employees to prevent health problems). Therefore, employees are mainly identified when they may already experience health complaints and are at risk for health problems. This makes it very difficult to identify employees before they have problems on multiple life domains. Several stakeholders at organizational and socio-political macro level indicated that we should address problems on multiple life domains preventively by having conversations with employees regularly:

S14 (socio-political macro level): "Just have regular conversations with these people about how their lives work, to tackle or even prevent problems as quickly as possible. But prevention is always difficult. So at least tackle it as quickly as possible, and in the context of sustainable employability to prevent them from falling through the ice."

Some stakeholders representing all three levels described that the availability of OPs in practice is limited and there is usually not enough time to solve problems on multiple life domains. Some stakeholders of OHSs mentioned that occupational social workers or occupational nurses usually have more time and are more accessible to discuss problems on multiple life domains preventively. Many stakeholders stated that organizations that performed a preventive occupational health examination, also offered individual follow-up conversations or preventive interventions. However, several stakeholders at OHS and socio-political macro level also noted that organizations often do not perform these types of follow-ups, as they are not always willing to invest money in follow-ups.

Risk of Conflicting Role for Supervisors in Addressing Problems on Multiple Life Domains

Several stakeholders representing all three levels stated that supervisors play an important role in the early identification of employees at risk for health problems. This way, supervisors can refer employees to an OHP on time or take other necessary actions to prevent sick leave. Some stakeholders, including the stakeholders at organizational level, mentioned that supervisors not only play a role in the identification of problems, but also have regular conversations with employees. Based on these conversations supervisors can determine whether an employee needs support of an OHP in solving problems:

S1 (organization): "Not to say: how is it going at your work, you are doing well or not, but how are you really doing? And then from that perspective, stick the feelers' out to see whether, okay is he still feeling well, if not, what is the reason, as far as the employee wants to share that, and then offer a helping hand, if there is actually help needed, in whatever form, then we do have an occupational health service available."

One stakeholder of an organization mentioned that a positive consequence of supervisors having regular conversations with employees, is that they are more likely to talk with their supervisors about problems. Not every supervisor is able to perform this type of conversation, and therefore several stakeholders from organizations and OHSs mentioned that there is a lot of attention for training of supervisors in early identification of problems and performing preventive conversations with employees. Some stakeholders representing all three levels also described that giving supervisors a more prominent role in the guidance of employees (i.e. self-management model), improves supervisors' responsibility for employees' health and safety at the workplace. Other stakeholders mentioned that supervisors taking responsibility may also unintentionally disadvantage employees; supervisors may take on the role of an OHP which may not always be the desired situation, support from an OHP may come too late, and supervisors

may take advantage of privacy-sensitive information of employees due to the unequal relationship between a supervisor and employee:

S13 (socio-political macro level): "And I think that is quite a disturbing development, because then you have to remember that this happens constantly in an unequal relationship. The employment relationship is simply one where the employer has obvious authority, so there is an unequal relationship where an employee often acts submissive to what an employer expects, and certainly people with a low socioeconomic status. Because your contract could not be extended, or you will receive a bad evaluation. And that also results in a rather complicated and therefore not properly regulated domain for which I have no solution, but I do see the risks."

Therefore, several stakeholders described that an OHP is important to advise and guide employees, independently of other interests. Moreover, some stakeholders stated that it is difficult for supervisors to be fully responsible for employees' health and safety, as they are not allowed to discuss health related problems with employees. Though, some stakeholders at organizational and socio-political macro level described that employees usually discuss everything with their supervisor, and that the privacy regulations with regard to discussing problems on multiple life domains are unclear.

Discussion

This study described the perceptions of different stakeholders on the context for implementation of preventive interventions that consider multiple life domains among employees with a lower SEP. Many organizational and socio-political factors were identified which impede or facilitate implementation and are related to the following themes; (1) the importance of addressing problems on multiple life domains among employees with a lower SEP, (2) unclarity of responsibilities for solving problems on multiple life domains, (3) necessity of better collaboration between occupational and curative healthcare, (4) insufficient investments in prevention by employers, (5) difficulties in early identification of employees at risk for health problems, and (6) risk of conflicting role for supervisors in addressing problems on multiple life domains.

This study showed that problems on multiple life domains are considered important to address among employees with a lower SEP. However, stakeholders in this study described that this group of employees has more difficult circumstances in- and outside the workplace to solve their problems. Stakeholders also mentioned that employees with a lower SEP more often have an accumulation of problems that are interrelated and maintain one another. As was described in this study and in literature, they could end up in a vicious cycle, which makes it even more

difficult to solve problems (23). Hence, this group of employees needs support to break this cycle, but it remains uncertain whether all problems on multiple life domains can be addressed at the workplace. Findings of this study showed that responsibilities of all stakeholders involved to solve problems on multiple life domains are considered unclear. In the Netherlands, occupational healthcare is operating by law in a private market and strongly depends on the contract between an OHS and employer. OHSs are often commercial organizations and they do not feel the responsibility to solve problems on other life domains than work. In the end, employers determine the intensity and focus of services provided by the OHS, which may be a barrier for preventive interventions that consider multiple life domains. Although there are some legal obligations for employers, stakeholders in this study described that employers mainly focus on the guidance of employees on sick leave and to a lesser extent on the prevention of sick leave. Moreover, it is evident that not all employers feel responsible and are willing to pay for solving all kinds of problems preventively. This may, to some extent, also apply to other countries, because international studies show that in the majority of the countries OHSs are paid mainly or only by employers (24, 25).

Stakeholders in this study representing GPs and OPs also mentioned that they do not feel responsible to solve problems on multiple life domains. In the Netherlands, occupational and curative healthcare are strictly separated. This provides employees two options to discuss their health complaints, but a connection between occupational and curative healthcare to collaborate is missing. The financial systems of occupational and curative healthcare are also separated in the Netherlands, which may further discourage collaboration. In contrast, occupational and curative healthcare are not strictly separated in other European countries, such as Finland and Germany (26). In these countries, OPs and GPs are often the same person or both OPs and GPs can perform occupational and curative tasks. For example, in Finland occupational health services are important providers of curative healthcare. Finnish OPs partly act as GPs for employees, about half of the GP visits takes place within occupational healthcare and almost all visits to an OP were for primary care advice (27). Hence, to provide adequate care to employees, European countries, such as Finland and Germany, are less dependent on collaboration between occupational and curative healthcare. Unfortunately, in the Netherlands adequate care for employees is highly dependent on collaboration between occupational and curative healthcare. Collaboration between GPs and OPs in general is not optimal (28, 29), and this is also a problem in countries where GPs are certified to give advice on sick leave (30,31,32). Although, GPs are often the first health professional for employees to discuss health complaints, they are reluctant to discuss work-related problems, due to a lack of expertise and time (26, 28, 33). Moreover, GPs express reluctance to contact an OP due to a lack of confidence in the independence of OPs and

limited access of OPs (28, 32). Thus, collaboration between these two domains needs improvement. To improve the collaboration, the first step is to raise awareness among GPs on the relation between health complaints and work, to train GPs to be more able to discuss work-related problems, and to refer patients more easily to an OP (28, 31, 32, 34). The second step is to explore initiatives to improve the collaboration, by for example addressing misconceptions between GPs and OPs roles and independence of OPs and how to reach and communicate effectively with each other (31).

In this study, several stakeholders described that employers of employees with a lower SEP give the health of their employees less priority and often put economic interests first. They focus more on the organizational processes and performances of employees than on the health and well-being of their employees (35,36,37). Although, it is understandable that employers primarily think about the needs and interests of their businesses, most employers are still willing to ensure a safe and healthy working environment for their employees. However, literature shows that some employers are more reluctant to invest in the working environment, particularly in case the employer considers employees with a lower SEP to be of lower value and more easily replaceable (38). Prevention is considered an important priority by all stakeholders in this study, but they also mentioned that investments in prevention are limited. Literature shows that there is insufficient attention by employers for prevention (29, 39), that a low number of organizations has policies on prevention, and if there are policies on prevention these are mainly present in larger organizations (39). The latter was also found in the present study; a smaller organization with fewer resources can be considered a barrier for investments in prevention. Another explanation for insufficient investments described in this study and in literature, is that the benefits of preventing health problems on the longer term are unclear (29). In the Netherlands, employers pay and therefore determine which preventive services and services for sick-listed employees are provided to employees in organizations. However, sick listed employees result in a financial burden for employers and the implementation of services for these employees are linked to short term economic benefits (38). As a result, employers are inclined to mainly focus on services for employees on sick leave (29) and will less likely invest in preventive services.

Prevention in organizations is challenging, as this study showed that methods for the identification of employees mainly focus on indicated prevention, which makes it difficult to early identify employees at risk. Although, employees in the Netherlands are enabled by law to visit an OP for preventive advice, employees make little use of this opportunity. Moreover, OPs availability to preventively solve problems on multiple life domains was also considered limited in this study. Their tasks mainly consist of providing advice to employees on sick leave,

in which employees may be unfamiliar with the preventive role of OPs (40). GPs also have limited time and expertise (32), and therefore the option for OPs to collaborate with other health professionals that are more accessible to solve problems on multiple life domains should be further explored. Literature also shows that employees may have a negative attitude towards OPs (40, 41). They are still insufficiently convinced of the OPs independence and see them as someone that is on the side of the employer as they are contracted and paid by employers (29, 40, 41). In contrast, employees in Finland are very satisfied with the services of an OP and visiting an OP is more common than visiting a GP, partially due to good accessibility of OPs (42, 43). Possible options that may change the attitude of employees towards OPs, improve the accessibility of OPs and the collaboration with other health professionals are: (1) integrate an OP or other professional specialized in work-related health problems in curative healthcare, or (2) organize healthcare around an individual person (29, 31, 39).

Supervisors in this study were also considered important for the early identification of employees at risk. Supervisors have regular contact (sometimes daily) with their employees and could therefore be the first person to notice whether an employee is at risk and refer them to an OHP at an early stage. Multiple studies showed that supervisor support is an important resource for health and well-being at work (44, 45). Supervisors that support employees to overcome health-related problems could violate the privacy regulations (46), but according to some stakeholders in this study this legal barrier was not seen as a barrier in practice, showing that the privacy regulations with regard to problems on multiple life domains are unclear. Other stakeholders in this study described that this may also result in unwanted situations for employees, because of the hierarchical relationship between an employee and supervisor. Whether supervisors can discuss health-related problems with their employees strongly depends on the organizational culture, and the relation between supervisors and employees (47).

Strengths and limitations

This qualitative study provided in-depth information about organizational and socio-political factors in occupational health practice among different stakeholders. Different contextual factors were identified, which provide valuable information for future implementation of preventive interventions that consider multiple life domains among employees with a lower SEP. Furthermore, this study seems context specific, but factors found in this study were also found in studies conducted in other countries, thus suggesting transferability of findings. A limitation of this study is that stakeholders were partially recruited by the use of snowball sampling, which could result in a sample of stakeholders that were already interested in the topic of this study and may hold more positive views on their own role in implementation. Another limitation related to the sample of

stakeholders is that contextual factors in relation to the prevention of health problems among employees with a lower SEP were discussed with stakeholders on organizational and socio-political level. The perspective of employees with a lower SEP is missing, while literature shows that stakeholders may hold other, or even more negative views on employees, than employees themselves (48, 49). A last limitation is that factors related to the content of interventions and potential users of interventions (e.g. occupational health professionals) were not investigated, but may in practice interfere with organizational and socio-political factors. For example, the degree to which the user is able to use the intervention in daily practice, may influence the degree to which organizations are willing to support implementation.

Implications for research and practice

Due to the difficulty to solve problems on multiple life domains among employees with a lower SEP, further research is needed on how organizations can adequately reach and support lower SEP employees with problems on multiple life domains. Furthermore, in this study employees with a lower SEP consisted of people with a regular job. However, employees with an even lower SEP, such as precarious workers or without a job, possibly have more problems on multiple life domains. Therefore, further research is also needed on the perspectives of stakeholders on employees with an even lower SEP. In addition, it should be explored which stakeholder could best deliver preventive interventions that consider problems on multiple life domains. Currently, the responsibilities are unclear, forming a situation wherein nobody feels responsible for dealing with problems on multiple life domains. Many different stakeholders, both in occupational and curative healthcare, are involved in dealing with these problems, but to effectively address problems on multiple life domains improvement in collaboration between these stakeholders is needed. To achieve this, reorganization of the Dutch healthcare system may be required towards more integrated care (29), wherein an employee is not dependent on the services of an employer and focus is on functioning of an individual in all life domains. Integrated care also has implications for the financial systems of both occupational and curative healthcare. Thus, to further improve collaboration the government needs to explore on how to financially bring these systems together or to financially compensate collaboration. Although, these separated healthcare systems make it difficult to effectively address problems on multiple life domains in the Netherlands, this may also be a problem that needs more attention in other countries. For example, countries wherein GPs are certified to give advice on sick leave also experience difficulties to assess the functioning of an individual in all life domains (32). Therefore, recommendations in this study to address problems on multiple life domains may also apply to other countries. This study also showed that it is very hard to convince employers to invest in prevention. If we want employers to invest more in prevention, more

knowledge and awareness must be created on the potential benefits of prevention with a focus on the return of investment for employers. Financial incentives or other forms of support may also be helpful, wherein the role of trade organizations, independent of employers, in facilitating preventive services should also be explored. However, curative healthcare also needs to invest more in prevention, as they, similar to occupational healthcare, invest too little in prevention. Thus, a societal change with more attention for and investments in prevention is required to address problems on multiple life domains at an early stage.

Conclusions

This study provides valuable information on contextual factors that are important for implementation of preventive interventions that consider multiple life domains among employees with a lower SEP. The results also show the challenges of implementing these types of interventions in occupational health practice. Employees with a lower SEP and organizations employing them are difficult to reach for preventive health interventions. It is a challenge to convince stakeholders of the added value to preventively address and solve problems on multiple life domains. Moreover, the responsibilities for solving problems on multiple life domains are unclear. Many different stakeholders in organizations (e.g. supervisors), occupational healthcare (e.g. OPs), but also in curative healthcare (e.g. GPs) need to be involved and collaborate to effectively address problems on multiple life domains. Due to the complex systems in place, measures that lay beyond interventions should be taken into account to ensure the feasibility of these type of interventions in practice. It may even require adjustments to existing policies and procedures in occupational health practice.

References

1. Mackenbach JP, Stirbu I, Roskam A-JR, Schaap MM, Menvielle G, Leinsalu M, et al. Socioeconomic inequalities in health in 22 European countries. *New England Journal of Medicine*. 2008;358(23):2468–81.
2. Burdorf A, Robroek SJ, Schuring M. Kennissynthese Werk (en) is Gezond. ZonMw; 2016.
3. André S, Kraaykamp G, Meuleman R. Een (on) gezonde leefstijl: opleiding als scheidslijn. Sociaal en Cultureel Planbureau (SCP); 2018.
4. De Wit M, Wind H, Hulshof CT, Frings-Dresen MH. Person-related factors associated with work participation in employees with health problems: a systematic review. *International Archives of Occupational and Environmental Health*. 2018;91(5):497–512.
5. Groeneveld IF, Proper KI, van der Beek AJ, Hildebrandt VH, van Mechelen W. Short and long term effects of a lifestyle intervention for construction workers at risk for cardiovascular disease: a randomized controlled trial. *BMC Public Health*. 2011;11:836.
6. Morgan PJ, Collins CE, Plotnikoff RC, Cook AT, Berthon B, Mitchell S, et al. The impact of a workplace-based weight loss program on work-related outcomes in overweight male shift workers. *Journal of Occupational and Environmental Medicine*. 2012;54(2):122–7.
7. Viester L, Verhagen EA, Bongers PM, van der Beek AJ. Effectiveness of a worksite intervention for male construction workers on dietary and physical activity behaviors, body mass index, and health outcomes: results of a randomized controlled trial. *American Journal of Health Promotion*. 2018;32(3):795–805.
8. Jørgensen MB, Faber A, Jespersen T, Hansen K, Ektor-Andersen J, Hansen JV, et al. Implementation of physical coordination training and cognitive behavioural training interventions at cleaning workplaces—secondary analyses of a randomised controlled trial. *Ergonomics*. 2012;55(7):762–72.
9. Granström F, Molarius A, Garvin P, Elo S, Feldman I, Kristenson M. Exploring trends in and determinants of educational inequalities in self-rated health. *Scandinavian Journal of Public Health*. 2015;43(7):677–86.
10. Van Oort FV, van Lenthe FJ, Mackenbach JP. Material, psychosocial, and behavioural factors in the explanation of educational inequalities in mortality in The Netherlands. *Journal of Epidemiology and Community Health*. 2005;59(3):214–20.
11. Huysmans MA, Schaafsma FG, Viester L, Anema JR. Multidisciplinaire Leidraad Participatieve Aanpak op de Werkplek – Hoofddocument en achtergronddocument. VU Medisch Centrum: EMGO Instituut voor onderzoek naar Gezondheid en Zorg; 2016.
12. Fleuren M, Wiefferink CH, Paulussen T. Checklist determinants of innovations in healthcare organizations. *Tijdschrift voor gezondheidswetenschappen*. 2010;88(2):51–54.
13. Eriksson A, Orvik A, Strandmark M, Nordsteien A, Torp S. Management and leadership approaches to health promotion and sustainable workplaces: A scoping review. *Societies*. 2017;7(2):14.
14. Nielsen K, Taris TW, Cox T. The future of organizational interventions: Addressing the challenges of today's organizations. *Work & Stress*. 2010;24(3):219–33.
15. Havermans BM, Boot CR, Brouwers EP, Houtman IL, Anema JR, van der Beek AJ. Process evaluation of a digital platform-based implementation strategy aimed at work stress prevention in a health care organization. *Journal of Occupational and Environmental Medicine*. 2018;60(9):e484–e91.

16. Nielsen K, Fredslund H, Christensen KB, Albertsen K. Success or failure? Interpreting and understanding the impact of interventions in four similar worksites. *Work & Stress*. 2006;20(3):272–87.
17. Green LW. Public health asks of systems science: to advance our evidence-based practice, can you help us get more practice-based evidence? *American Journal of Public Health*. 2006;96(3):406–9.
18. Thorlindsson T. Bring in the social context: Towards an integrated approach to health promotion and prevention. *Scandinavian Journal of Public Health*. 2011;39(6):19–25.
19. Checklist voor een basiscontract voor arbodienstverlening. OVAL; 2018 [Available from: https://www.oval.nl/cms/public/files/2018-08/1535526303_checklist-basiscontract-arbodienstverlening-versie-juli-2018.pdf?7cfbd1ffbd].
20. Van der Kemp SA, van der Zeijden PT. De markt en kwaliteit van arbodienstverlening. Panteia; 2014.
21. Douwes M, van Genabeek JA, van den Bossche SN, van Dam L, Eysink P, Fernandez Beiro L, et al. *Arbobaalans 2016. Kwaliteit van de arbeid, effecten en maatregelen in Nederland*. Leiden: TNO; 2016.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77–101.
23. Hosper K, Loenen T. *Leven met ongezonde stress: Aandacht voor chronische stress in de aanpak van gezondheidsverschillen*. Utrecht: Pharos; 2021.
24. Sakowski P, Marcinkiewicz A. Health promotion and prevention in occupational health systems in Europe. *International Journal of Occupational Medicine and Environmental Health*. 2019;32(3):353–61.
25. Rantanen J, Lehtinen S, Valenti A, Iavicoli S. A global survey on occupational health services in selected international commission on occupational health (ICOH) member countries. *BMC Public Health*. 2017;17(1):787.
26. Bakker RH, Krol B, van der Gulden JW, Groothoff JW. Arbocuratieve samenwerking: een vergelijking van de taken en positie van de bedrijfsarts in vier landen. *TSG-Tijdschrift voor Gezondheidswetenschappen*. 2005;83(5):257–64.
27. Vuorenkoski L, Mladovsky P, Mossialos E. Finland: Health system review. *Health System in Transition*. 2008;10(4):1–168.
28. De Kock CA, Lucassen PL, Spinnewijn L, Knottnerus JA, Buijs PC, Steenbeek R, et al. How do Dutch GPs address work-related problems? A focus group study. *European Journal of General Practice*. 2016;22(3):169–75.
29. KNMG-Visie document Zorg die werkt. Naar een betere arbeidsgerichte medische zorg voor (potentieel) werkenden. Utrecht: KNMG; 2017.
30. Verger P, Ménard C, Richard J-B, Demortière G, Beck F. Collaboration between general practitioners and occupational physicians: a comparison of the results of two national surveys in France. *Journal of Occupational and Environmental Medicine*. 2014;56(2):209–13.
31. Moßhammer D, Natanzon I, Manske I, Grutschkowski P, Rieger MA. Cooperation between general practitioners and occupational health physicians in Germany: how can it be optimised? A qualitative study. *International Archives of Occupational and Environmental Health*. 2014;87(2):137–46.
32. Letrillart L, Barrau A. Difficulties with the sickness certification process in general practice and possible solutions: a systematic review. *European Journal of General Practice*. 2012;18(4):219–28.
33. Buijs P, Gunnyeon B, van Weel C. Primary health care: what role for occupational health? *British Journal of General Practice*. 2012;62(605):623–4

34. Bosma AR, Boot CR, Snippen NC, Schaafsma FG, Anema JR. Supporting employees with chronic conditions to stay at work: perspectives of occupational health professionals and organizational representatives. *BMC Public Health*. 2021;21:592.
35. Tappura S, Syvänen S, Saarela KL. Challenges and needs for support in managing occupational health and safety from managers' viewpoints. *Nordic Journal of Working Life Studies*. 2014;4(3):31-51.
36. Miller P, Haslam C. Why employers spend money on employee health: Interviews with occupational health and safety professionals from British Industry. *Safety Science*. 2009;47(2):163-9.
37. Hanna ES, Markham S. Constructing better health and wellbeing? Understanding structural constraints on promoting health and wellbeing in the UK construction industry. *International Journal of Workplace Health Management*. 2019;12(3):146-59.
38. Seing I, MacEachen E, Ekberg K, Ståhl C. Return to work or job transition? Employer dilemmas in taking social responsibility for return to work in local workplace practice. *Disability and Rehabilitation*. 2015;37(19):1760-9.
39. Arbovisie 2040. Focus groep Arbostelsel. Ministerie van Sociale Zaken en Werkgelegenheid. 2020 [Available from: <https://www.arboportaal.nl/documenten/publicatie/2020/06/26/verslag-focusgroep-1-arbostelsel>].
40. De Brouwer CP, Verdonk P, Van Amelsvoort LG, Jansen NW, Kant I, Widdershoven GA. Experiences of occupational physicians with the implementation of indicated prevention for long term sickness absence. *Work*. 2017;57(2):157-172.
41. Bosma AR, Boot CR, Schaafsma FG, Anema JR. Facilitators, barriers and support needs for staying at work with a chronic condition: a focus group study. *BMC Public Health*. 2020;20:201.
42. Kimanen A, Manninen P, Räsänen K, Rautio M, Husman P, Husman K. Factors associated with visits to occupational health physicians in Finland. *Occupational Medicine*. 2010;60(1):29-35.
43. Kimanen A, Rautio M, Manninen P, Räsänen K, Husman P, Husman K. Primary care visits to occupational health physicians and nurses in Finland. *Scandinavian Journal of Public Health*. 2011;39(5):525-32.
44. Hämmig O. Health and well-being at work: The key role of supervisor support. *SSM-population health*. 2017;3:393-402.
45. Sommovigo V, Setti I, Maiolo ME, Argentero P. Tunnel construction workers' well-being: the role of job control and supervisor support. *International Journal of Construction Management*. 2019;21(4):1-13.
46. Autoriteit Persoonsgegevens. De zieke werknemer. Beleidsregels voor de verwerking van persoonsgegevens over de gezondheid van zieke werknemers. Autoriteit Persoonsgegevens; 2016.
47. Von Schrader S, Malzer V, Bruyère S. Perspectives on disability disclosure: the importance of employer practices and workplace climate. *Employee Responsibilities and Rights Journal* 2014;26:237-55.
48. Eakin JM. Towards a 'standpoint' perspective: health and safety in small workplaces from the perspective of the workers. *Policy and Practice in Health and Safety*. 2010;8(2):113-27.
49. Kilgour E, Kosny A, McKenzie D, Collie A. Interactions between injured workers and insurers in workers' compensation systems: a systematic review of qualitative research literature. *Journal of Occupational Rehabilitation*. 2015;25(1):160-81.

Supplementary files

Supplementary file 1. Overview of themes, sub-themes, and codes

Theme	Sub-themes	Codes and sub-codes	Stakeholder
The importance of addressing problems on multiple life domains among employees with a lower SEP	Number of problems higher among employees with a lower SEP	More often an accumulation of problems	Recognized as a problem among employees with a lower SEP: organization 1x, occupational health service 3x, socio-political macro level 5x
		More often problems outside the workplace	
		More often unhealthy lifestyles	
		More often financial problems	
Reasons to focus more on employees with a lower SEP		Addressing problems on multiple life domains of importance for all employees, but employees with a lower SEP require more attention/support	Important problem to address among employees with a lower SEP: organization 1x, occupational health service 2x, socio-political macro level 4x
		<ul style="list-style-type: none"> Problems on multiple life domains also among employees with a high SEP Employees with a lower SEP have less problem-solving skills 	
		Problems on multiple life domains difficult to solve (in time) among employees with a lower SEP	
Characteristics employees with a lower SEP associated with problems on multiple life domains		Difficulties with finding help/finding solutions	Difficult problem to address among employees with a lower SEP: organization 3x, occupational health service 2x, socio-political macro level 7x
		Lack of support/help from environment	
		Difficult to identify problems/less ability to reflect on problems	
		Difficult to motivate for interventions/do not ask for help	
		<ul style="list-style-type: none"> Do not want to talk about problems Employees eventually decide for themselves if they want to use the help or support 	

Theme	Sub-themes	Codes and sub-codes	Stakeholder
Unclarity of responsibilities for solving problems on multiple life domains	Occupational health services depend their services on the demands of employers	Occupational health service not feeling responsible <ul style="list-style-type: none"> Occupational health service commercial organization that sells services to employers Services for occupational health eventually determined by the employer Occupational health service advisor for employer 	No responsibility to solve problems on multiple life domains: occupational health service 3x
	Employers' responsibility influences the manner in which problems outside the workplace are addressed	Employer not feeling responsible <ul style="list-style-type: none"> Employers place the cause for problems outside the workplace SME employers are not feeling responsible SME employers no expertise on occupational health SME employer occupational healthcare arranged with occupational health service 	Employers not responsible: occupational health service 2x, socio-political macro level 3x
		Employer feeling responsible <ul style="list-style-type: none"> Problems outside the workplace are solved by external services/ interventions Employer facilitate solutions for problems outside the workplace 	Employer responsible: organization 3x, occupational health service 2x, socio-political macro level 3x
		Depending on employers seeing their employees as valuable	Occupational health service 1x, socio-political macro level 2x
		Depending on the financial resources that are available	Occupational health service 2x, socio-political macro level 1x

Theme	Sub-themes	Codes and sub-codes	Stakeholder
	No shared responsibility between employers and employees	Employee is eventually responsible to solve problems <ul style="list-style-type: none"> Employer/professionals offer tools, do not solve problems <hr/> Influence of employees on occupational health policies dependent on Works Council/type of organization <ul style="list-style-type: none"> Employees with a lower SEP smaller amount of influence on occupational health policies 	Shared responsibility: organization 1x, socio-political macro level 2x No influence of employees: socio-political macro level 2x
	No responsibility experienced in occupational and curative healthcare	General practitioner and occupational health physician both not responsible to solve all problems on multiple life domains <hr/> Occupational medicine must focus on problems at the workplace <hr/> General medicine must focus on health complaints <hr/> General practitioner have limited expertise with problems at the workplace <hr/> General practitioners have not enough time for problems at the workplace <ul style="list-style-type: none"> General practice nurses have more time and can collaborate with occupational health professionals 	No responsibility in occupational and curative healthcare: socio-political macro level 4x
	No responsibility for trade organizations	Trade organizations have an advisory role/share knowledge, do not determine which services are provided	All trade organizations; KOM, Vollandis, OVAL

Theme	Sub-themes	Codes and sub-codes	Stakeholder
Necessity of better collaboration between occupational and curative health care	Two pathways for identifying problems on multiple life domains	Problems on multiple life domains can be discussed at the workplace	Organization 3x, occupational health service
		<ul style="list-style-type: none"> Depending on organizational culture 	4x, socio-political macro level 4x
		Problems on multiple life domains can/should be discussed in curative health care	Occupational health service 2x, socio-political macro level 2x
	Collaboration between occupational and curative health care is important	<p>Collaboration between occupational and curative healthcare is important</p> <ul style="list-style-type: none"> General practitioner/general practice nurse first person to contact in case of health complaints Not everyone has access to occupational healthcare 	Collaboration is important: occupational health service 2x, socio-political macro level 6x
	Collaboration is not facilitated	<p>Collaboration professionals occupational and curative healthcare is difficult</p> <ul style="list-style-type: none"> Occupational medicine separate from curative health care is a barrier for collaboration Privacy regulation is a barrier for exchanging information between professionals/ organizations 	Collaboration is experienced as difficult: occupational health service 2x, socio-political macro level 5x
	Improve collaboration between occupational and curative healthcare by integral care	<p>Organize healthcare around an individual employee (network care)</p> <hr/> <p>Occupational physician in curative healthcare</p> <hr/> <p>Take into account work factors in curative healthcare</p>	Improve collaboration by integral care: occupational health service 2x, socio-political macro level 5x

Theme	Sub-themes	Codes and sub-codes	Stakeholder
Insufficient investments in prevention by employers	More attention needed for prevention	Prevention is an important priority <ul style="list-style-type: none"> Much attention for prevention 	Prevention is important: Organization 3x, occupational health service 4x, socio-political macro level 5x
		More attention needed for prevention <ul style="list-style-type: none"> More attention needed for prevention in education of health professionals Trade organizations can give attention to prevention among employers 	More attention needed: socio-political macro level 4x
	Insufficient attention for prevention in contracts	Prevention at the workplace dependent of the contract between employer and occupational health service <ul style="list-style-type: none"> Preventive services often not included in the basic contracts Contracts focus on the guidance of employees on sick leave Attention employer shifted to sick leave due to the gatekeeper act Occupational health professionals not always involved in forming of contracts Occupational health professionals more involved in the formation of contracts, more likely to be used for preventive services 	Prevention insufficient in contracts: organization 1x, occupational health service 3x, socio-political macro level 4x

Theme	Sub-themes	Codes and sub-codes	Stakeholder
	Insufficient investments in prevention	Employers are less/not willing to spend money on prevention	Occupational health service 1x, socio-political macro level 4x
		Employers are more willing to spend money on prevention	Occupational health service 2x
Reasons for insufficient investments in prevention		Prevention dependent on the financial resources that are available	Availability of money: organization 2x, occupational health service 3x, socio-political macro level 5x
		<ul style="list-style-type: none"> Smaller organizations and/or organizations in crisis have less (financial) resources 	
		Prevention dependent on employers seeing their employees as valuable	Socio-political macro level 4x
		Prevention dependent on the visibility of results	Visibility of results: organization 1x, occupational health service 2x, socio-political macro level 6x
		<ul style="list-style-type: none"> Results of prevention are unclear Results of prevention not quantifiable Employers focus on short term results 	
		Employer is not/less aware of the benefits of prevention	Not aware of benefits: organization 1x, occupational health service 1x, socio-political macro level 3x

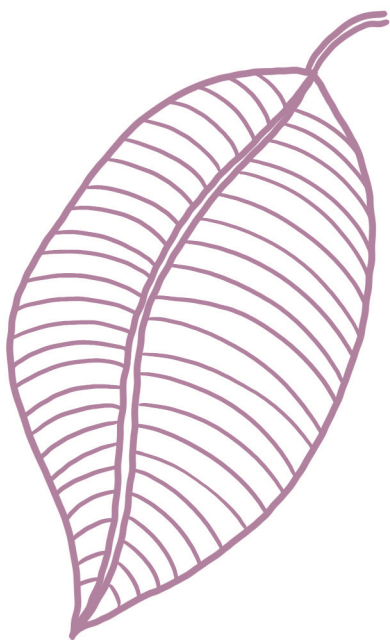
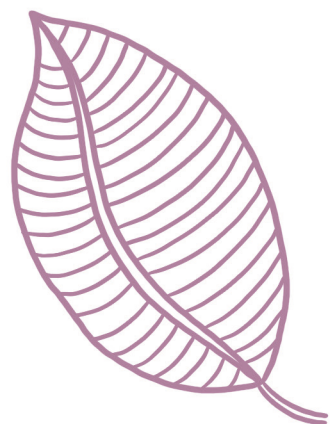
Theme	Sub-themes	Codes and sub-codes	Stakeholder
		Employer is aware of the benefits of prevention <ul style="list-style-type: none"> We only act if there is a problem 	Aware of benefits: organization 2x, occupational health service 1x, socio-political macro level 2x
		Prevention dependent on support of key stakeholders in the organization	Organization 2x, Occupational health service, socio-political macro level 4x
	Increase investments in prevention	Improve prevention by working out business cases and with innovation in preventive services	Socio-political macro level 4x
Difficulties in early identification of employees at risk for health problems	Methods for identification focus on indicated prevention	Identification of employees at risk based on monitoring, sick leave, stop sign model, social medical team consultation (SMT), preventive medical examination (PMO) <ul style="list-style-type: none"> Employees are identified when they are experiencing problems 	Focus on indicated prevention: Organization 3x, occupational health service 4x, socio-political macro level 1x
	Occupational health physicians mainly used for guidance of employees on sick leave	Regularly perform conversations with employees to preventively address problems on multiple life domains <ul style="list-style-type: none"> Occupational physician limited available to solve problems on multiple life domains preventively Occupational social workers/ occupational nurses preventively more available to solve problems on multiple life domains 	Occupational health physicians mainly used for guidance of employees on sick leave: organization 1x, occupational health service 1x, socio-political macro level 3x

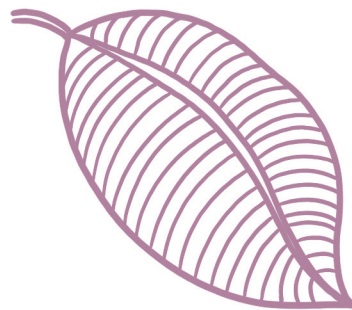
Theme	Sub-themes	Codes and sub-codes	Stakeholder
	Individual preventive conversations with occupational health professionals and follow-up interventions	Individual preventive conversations/ follow-up interventions with occupational health professionals are (more often) performed	Organization 2x, occupational health service 4x, socio-political macro level 2x
		Individual preventive conversations/ follow-up interventions are not often performed <ul style="list-style-type: none"> Dependent on the extent to which an organization wants to invest 	Occupational health service 2x, socio-political macro level 3x
Risk of conflicting role for supervisors in addressing problems on multiple life domains	Supervisors play an important role in identifying and discussing problems preventively	Supervisors play an important role in the early identification of employees at risk for health problems <ul style="list-style-type: none"> Supervisors play an important role in referring employees to an occupational health professionals on time <hr/> Supervisors have preventive conversations with employees <hr/> Much attention in organizations and occupational health services in training of supervisors in early identification of problems and performing preventive conversations with employees. <hr/> Self-management model: improve responsibility of supervisors on guidance of employees health and safety	Supervisors play an important role: organization 2x, occupational health service 3x, socio-political macro level 1x

Theme	Sub-themes	Codes and sub-codes	Stakeholder
	Reasons for not using supervisors in identifying and discussing problems preventively	<p data-bbox="589 302 941 356">Self-management model; employees disadvantaged</p> <ul data-bbox="589 365 941 802" style="list-style-type: none"> <li data-bbox="589 365 941 451">• Risk that supervisors take on the role of the occupational health professional <li data-bbox="589 460 941 546">• Risk that supervisors take advantage of privacy-sensitive information of employees <li data-bbox="589 555 941 675">• Risk that to come in contact with occupational health professionals is more difficult or too late <li data-bbox="589 684 941 802">• Occupational health professional important to advice employees independently of other interests <hr data-bbox="589 811 941 815"/> <p data-bbox="589 824 941 910">Self-management model difficult, as supervisors are not allowed to ask employees everything</p> <ul data-bbox="589 919 941 1070" style="list-style-type: none"> <li data-bbox="589 919 941 973">• Usually employees discuss everything with their supervisor <li data-bbox="589 982 941 1070">• Privacy regulations to discuss problems on multiple life domains unclear 	Not using supervisors: organization 3x, occupational health service 3x, socio-political macro level 3x

Part III

**The role of supervisors in supporting workers
with a work disability**





Chapter 6

“I noticed that when I have a good supervisor, it can make a lot of difference.” A qualitative study on guidance of employees with a work disability to improve sustainable employability

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Abstract

Purpose: For employees with a work disability adequate daily guidance from supervisors is key for sustainable employability. Supervisors often lack expertise to guide this group of employees. Mentorwijs (literal translation: Mentorwise) is a training for supervisors to improve the guidance of employees with a work disability. The aim of this study was to investigate the experiences of employees with a work disability regarding: (1) the guidance from their supervisors (who followed the Mentorwijs training), (2) which differences they notice in the guidance due to the Mentorwijs training, and (3) what kind of aspects they consider important in their guidance to achieve sustainable employability.

Methods: A qualitative study was performed with semi-structured (group) interviews among twenty-one employees with a work disability. Thematic analysis was performed to analyze the data.

Results: Themes that followed from the interviews were: (1) work tasks and conditions can facilitate or hinder sustainable employability; (2) relationships among employees and with supervisors can affect sustainable employability; (3) a desire for new opportunities and challenges; and (4) a need for supervisor skills to facilitate sustainable employability, i.e. appreciation, availability of help, dealing with problems, listening, attitude and communication. According to employees, changes were mainly noticed in supervisor skills.

Conclusions: Employees with a work disability were very satisfied with the guidance of supervisors who followed the Mentorwijs training. To improve sustainable employability, training of supervisors should focus more on adequate work conditions, providing employees opportunities to learn new work tasks and improving supervisors' skills regarding appreciation, attitude, and communication.

Keywords: Employees; Work disability; Supervisors; Sustainable employability; Qualitative study.

Background

Work is generally considered good for one's health, because it can offer financial independence, which in turn reduces psychological distress, and improves physical and psychosocial well-being (1, 2). In contrast, those unemployed and with insecure work have higher mortality rates and poorer physical and mental health than people with a job (1, 3). In certain groups, unemployment and job insecurity are more prevalent than in others. One of those groups are employees with a work disability that are employed in supported workplaces and/or in the regular labor market. This can include people with a (mild) intellectual disability, psychological disability, physical disability, (very) low level of education and/or learning delay (4). In the Netherlands, there were in 2019 more than 800 thousand persons between 15 and 65 years old who were prevented from obtaining or maintaining sustainable work due to a long-term illness, a disorder, or disability (5). About 45–50% of these people had a paid job, while the remainder received social insurance benefits (5). Social insurance benefits place a significant financial burden on society and being unemployed has, as mentioned earlier, negative health consequences. Therefore, it is important that employees with a work disability find work and maintain employed.

For employees with a disability, it is hard to find a job (6, 7). Moreover, when they have a job, employees with a work disability less frequently have a permanent contract than employees without a work disability (8). Studies on the reasons why companies do not hire employees with a work disability showed that supervisors believe that this group of employees is less productive and more absent, and therefore supervisors prefer someone without work disabilities with equal suitability (4, 9, 10). Improving sustainable employability is a way to ensure that employees with a work disability will find work and maintain employed (11). Sustainable employability is defined as employee's ability to contribute through their work, while learning skills, maintaining good health and well-being throughout their working life (12, 13). Sustainable employability consists of four core components: health, productivity, valuable work, and long-term perspective (12). For employees with a work disability, optimal guidance from their supervisor by focusing on these components is key for sustainable employability (4). Research shows that training supervisors in providing the right type of guidance can reduce absenteeism and promote reintegration of employees with a work disability, and improve sustainable employability (14). When supervising employees with a work disability, a supervisor must for instance, set clear expectations and motivate the employee by providing good examples (4). However, unfortunately supervisors often lack the expertise to adequately guide employees with a work disability (15). They may have negative perceptions and attitudes and little knowledge about employees with a work disability and the guidance they need (16–18).

Therefore, guidance of supervisors needs to be improved to increase sustainable employability of employees with a work disability (4).

Mentorwijs (literal translation in English: Mentorwise, which refers to the supervisor who takes the role of mentor) is a training that has been developed for supervisors to better guide employees with a work disability. The aim of the training is to develop and strengthen the knowledge, attitudes, and skills for adequate guidance of employees with a work disability. Supervisors, who have completed the Mentorwijs training are generally positive about the training (4). However, it is unknown what the experiences of employees are regarding the guidance of supervisors who have followed the Mentorwijs training and what kind of aspects they find important for their sustainable employability. Such information could provide relevant insights for those supervising employees with a work disability, in the context of Mentorwijs and beyond. Therefore, a qualitative study was conducted to answer the following research question: What are the experiences of employees with a work disability regarding (1) the guidance of supervisors (who followed the Mentorwijs training), (2) which differences they notice in the guidance due to the Mentorwijs training, and (3) what kind of aspects they consider important in their guidance to achieve sustainable employability?

Methods

Study Design

In this qualitative study, semi-structured (group) interviews were held with employees with a work disability to obtain insight into their experiences about the guidance of supervisors at the workplace. The Medical Ethics Committee of the VU University Medical Center approved the study protocol and decided that the Medical Research Involving Human Subjects Act does not apply to this study (reference no. 2019.239). This study, which is part of a larger study on the effectiveness of the Mentorwijs training, is also registered in the Dutch Trial Register (19). The COREQ (Consolidated criteria for reporting qualitative research) checklist was used to conduct and report this study (20). All participants provided written informed consent before participating in the study.

Mentorwijs Training

The Mentorwijs training focuses on supervisors in regular labor organizations and consists of five meetings of 2.5 hours, each with specific learning objectives. The training is face-to-face with a combination of theory and practice, with ample opportunity for supervisors to interact and share experiences from their daily practice. The training focuses on 1) developing knowledge on type of work disabilities and possibilities for support or adjustments at the workplace for employees with a work disability, 2) building an open and involved attitude of

supervisors to enhance the autonomy of employees, 3) strengthening specific skills, such as applying different leadership styles and skills for communication, and 4) developing and strengthening knowledge, attitudes and skills to increase the self-efficacy of supervisors regarding the guidance of employees with a work disability.

Recruitment

Supervisors who had followed the Mentorwijs training were approached to help recruit employees with a work disability who were direct reports of these supervisors, using a convenience sampling approach. After signing informed consent, employees completed a short questionnaire wherein they answered questions regarding their 1) age, gender, and education, 2) type of work and organization, and 3) type of disability. Employees could also indicate if they agreed to be approached for an interview. Supervisors of employees that agreed to be approached for an interview were asked by the researchers to schedule an interview. The interviews took place at the workplace, as this was a familiar environment for the employees, making it easier to reach this target group. For each interview we aimed to recruit several employees, because this could stimulate discussion and portray multiple perspectives. Employees could also feel more comfortable in the presence of their colleagues, which could make them more inclined to participate. As a single supervisor typically supervised multiple employees, most employees could be interviewed as a group at the workplace. Due to our sampling strategy information of supervisors on how many employees refused to participate in an interview was difficult to determine.

Data-collection

An interview guide was used to conduct semi-structured interviews. This interview guide consisted of topics with (sub) questions regarding: (1) job satisfaction, (2) guidance satisfaction, (3) change in guidance after the Mentorwijs training (4) employee's satisfaction of the fit between knowledge and skills and the demands of the job, (5) confidence regarding performance of the job (self-efficacy), and (6) position in the company (supplementary file 1). The interview guide was used to ensure that the same topics were discussed in every interview. The topics were based on important aspects for sustainable employability of this target group (4, 21). The interviewers primarily asked about valuable work components and components for long-term sustainable employability (12). This was done by asking employees for opinions about their work and work tasks and whether they see themselves working for a long time at the current company. Less emphasis was placed on the other components of sustainable employability (i.e. health and productivity), because the Mentorwijs training did not aim to improve the health and/or productivity of workers with a work disability. The training focused merely on the valuable work component and long-term perspective, such as job

motivation and the fit between the job and the employee to increase the chance that employees with a work disability remain employed over a longer period of time.

Interviews were audio-recorded and conducted at the workplace between October 2019 and April 2021, at least 3 months after their supervisor completed the training. Interviews were only conducted with employees - the supervisor was not present, and employees were ensured that audio-recordings and transcripts were not shared with their supervisors. Prior to the interview, employees were informed about the aim of this research, but not about personal aims of the researchers. No relationship was established between the employees and the researchers prior to the study, and no repeat interviews were conducted. The interviews started by getting to know each other and asking the employees what kind of work they do. Interviews were conducted until data saturation occurred and lasted 20–40 min. Two female researchers were present at each interview. One researcher, who was experienced in conducting interviews, led the interview (RS), while the other researcher, who was less experienced, observed and asked additional questions when necessary (VS). RS is an occupational health researcher with previous experience in conducting interviews and qualitative research. VS is a Health and Life Sciences Bachelor student, who was trained in qualitative research and interviewing skills. There were differences in the social status and educational level between the researchers and employees. However, researchers aimed to create a safe environment, to ensure that employees felt comfortable. Using their training and experience in qualitative research with vulnerable populations they aimed to remain objective as possible and used clarifying questions to fully understand the answers of employees. No field notes were made during interviews, but every interview was evaluated, and results were considered in future interviews or in data-analysis.

Data-analysis

To analyze the data, interviews were transcribed verbatim, and transcripts were pseudomized by removing all identifiable information. The transcripts were coded inductive and iterative using ATLAS.ti 8., using an interpretative constructivist approach (i.e. focused on how people interpret reality and to understand how people see or experience the world) (22) to explore and understand the experiences of employees with a work disability. Thematic (content) analysis was used to analyze the data and identify themes using open coding, axial coding, and selective coding (22, 23). First, one interview was independently open coded by two researchers (VS, RS), and the codes were compared for consistency. Conflicts were resolved and a common coding method was determined. Second, one researcher (VS) coded four interviews. Third, a consultation about the coding method between two researchers (VS, RS) took place, after which the remaining

interviews were open coded by one researcher (VS). Fourth, during axial coding all codes were discussed, and categories of codes were formed (VS, RS). Fifth, continuous consultation between the researchers (VS, RS, PC) and constant comparison took place to increase the reliability of the codes. New categories were created, renamed, merged, and eventually visualized to obtain a clear overview of how the codes related to each other. Sixth, selective coding led to the formation of themes during a consensus meeting (VS, RS, PC). See supplementary file 2 for the codebook. These themes were narratively described, to describe the experiences of employees with a work disability. Transcripts were not returned to the employees for comments and/or corrections, and no member check took place. Though, in all stages of the data-analyses the researchers critically reflected on the codes, categories and themes that emerged from the data, by checking the interpretations obtained in each phase and by going continuously back to the data. Themes were substantiated with relevant citations from the interviews (that were translated from Dutch into English). Data-analysis was performed in parallel with data-collection, hence researchers could decide whether data-saturation was reached based on the content of the interviews.

Results

Study Population

Interviews were held with twenty-one employees with a work disability whose supervisors followed the Mentorwijs training. It concerned ten interviews, of which seven were group interviews with two or more employees (up to four per interview) and three interviews with one employee. The interviewees consisted of seventeen men (81%) and four women, ranging between 20 to 61 years of age and with a lower (71%), middle (24%) or higher educational level (5%) (Table 1). Employees had a mild intellectual disability (23%), lower education level and/or learning delay (27%), psychological disability (23%), and/or a physical disability (14%). For some employees the disability was unknown (14%), as they were not aware of their disability or were not willing to answer this question. Employees with a work disability had various occupations within various companies, such as gardener (57%), production employee (19%), administrative employee (10%), kitchen worker (10%) or cleaner (5%).

Table 1. Characteristics of the study sample

	n = 21
Age	
Mean (SD)	41.5(13.1)
Range	20-61
Gender	
Men	17 (81%)
Women	4 (19%)
Educational level	
Low	15 (71%)
Middle	5 (24%)
High	1 (5%)
Disability	
Low level of education and/or learning delay	6 (29%)
Mild intellectual disability	5 (24%)
Psychological disability	5 (24%)
Physical disability	3 (14%)
Unknown	3 (14%)
Occupation	
Gardener	12 (57%)
Production employee	4 (19%)
Administrative employee	2 (10%)
Kitchen employee	2 (10%)
Cleaner	1 (5%)

Various themes emerged from the interviews: work tasks and conditions can facilitate or hinder sustainable employability, relationships among employees and with supervisors can affect sustainable employability, a desire for new opportunities and challenges, and need for supervisor skills to facilitate sustainable employability. Results associated with these themes are described below.

Work Tasks and Conditions can Facilitate or Hinder Sustainable Employability

Employees indicated many facilitators and barriers within their work and work tasks for sustainable employability. The most prominently facilitators mentioned were that work was considered fun, easy, and there was an enjoyable atmosphere. Employees also mentioned that there was no large workload, they had a lot of freedom in performing their work tasks (independently), and they wanted to do this work for a long time. In addition, they stated that their work tasks were diverse, not difficult, structured, and often carried out independently:

E14: "I am more drawn into my own, so when I know what to do, I go my own way. For some work tasks it is nice that they help me, but most tasks I can do myself" (Man, 23 years).

Some employees also stated that adjustments were made at the workplace to facilitate performing their work tasks. For example, one worker mentioned that he could perform his work tasks step-by-step at its own pace. On the other hand, barriers for sustainable employability within work tasks were also mentioned. In contrast to employees that were positive about their work, others described that the work was often monotonous, boring and energy consuming. Some employees stated that work that required a lot of concentration was hard. They also mentioned they had to continue working outside, despite the bad weather conditions, or sometimes had a lot of work hours or had to work hard:

E4: "They always say that we have to work hard. That is ridiculous, because they say we have to work hard but they also say we are employees with a work disability" (Man, 59 years).

In addition, employees mentioned that they were not always satisfied with their working conditions. Some employees indicated that they did not have proper work clothes and insufficient breaks. Barriers within work tasks and working conditions resulted in needs; for example, that employees wanted to feel useful at work, have more responsibility, more variation in work tasks, more structure in the workplace, and perform work with societal relevance. Needs related to working conditions involved proper work clothes and more breaks.

Relationships Among Employees and with Supervisors can Affect Sustainable Employability

Employees also discussed their relationships with other employees and with their supervisor. Both positive and negative elements from these relationships were mentioned that could impact sustainable employability. Employees mentioned they were generally positive about relationships with their colleagues and that collaboration between colleagues went well. For example, an employee indicated that he has colleagues with a lot of experience, who help him well with his work tasks if these are too difficult. In addition, many employees spoke about the importance of equality in the workplace. Employees indicated they were seen as equal by their colleagues, and they were also treated equally by their supervisor. Employees with and without work disabilities were treated equally, as was said by an employee:

E8: "Everyone is equal. Nobody is more than the rest." (Man, 49 years).

Employees also reported that there was little hierarchy between colleagues with the same occupation. For several employees, conflicts between colleagues therefore hardly occurred. They said that they were pleased that they had not experienced any conflicts with other colleagues:

E13: "No, I never have them (conflicts). Yes, that's great." (Woman, 44 years).

Although most employees indicated that there was indeed equality at the workplace, this was not the case for every employee. Some colleagues considered themselves more important than others:

E14: "There is always a distinction between the employees from the office and employees from the production (...). You have to do the work together, if we (employees from production) don't do anything, then they (employees from the office) can do what they want, but then nothing happens" (Man, 23 years).

Another employee indicated that conflicts with his supervisor sometimes occurred, with unpleasant working conditions being a reason for such conflicts. Other employees also mentioned negative elements of relationships at the workplace. For example, one employee indicated that there was a lot of gossip at work, which he did not like, and which resulted in a poor relationship with his colleagues. Other employees said that there were colleagues they did not like or irritations between employees occurred, which were then resolved by the supervisor.

Besides the relationships among employees, interviewees also talked about the relationship with their supervisor. Some employees mentioned that conflicts were relatively quickly resolved by talking about the matter. Such conversations were often initiated by the supervisor. It was also mentioned by one employee that there was a lot of understanding for his work disability from the supervisor. In contrast, another employee felt he was treated like a child and even hated his supervisor:

E15: "He thinks he is powerful, that can simply be said. Just a cocky bastard. As soon as things go well it's all good, but when things go wrong, he will yell at someone. But the mistake is never his fault." (Man, 20 years).

According to one employee, the relationship with their supervisor had positively changed because of the Mentorwijs training. As a result of the training, they communicated more, considered each other in a better way and worked more together:

E14: "First, everyone was on his own island and now it is more like he says: a little more communication and a little more cooperation and more consideration for others." (Man, 23 years).

A Desire for New Opportunities and Challenges

Employees discussed the desire for challenges in their work tasks and new opportunities to learn new work tasks, to have variety in work tasks, and to get the opportunity to further develop themselves in performing their work tasks. These desires also prompted questions about the current possibilities and opportunities to learn new skills and tasks. Some employees mentioned that work was educational, challenging, there were opportunities to learn new work tasks, to make mistakes, and to get opportunities to grow:

E20: "I have been working in the kitchen for a while, and now I received training from the organization, and over the years I have been given more responsibility." (Man, 33 years).

An employee also indicated that it is nice to learn new things step by step. However, several employees said that these learning moments were scarce and that they wanted them more often. This showed that the desire for new opportunities and challenges is greater than the current supervisors or employers could and/or wanted to provide:

E19: "Yes, you can follow a training. I already asked my supervisor a few times, but I still haven't heard from that. I still don't know if anything will ever go through, I just want to be able to work my way up." (Man, 31 years).

Need for Supervisor Skills to Facilitate Sustainable Employability

During the interviews, various skills (both positive and negative) of a supervisor were discussed, what employees would like to see in the skills of their supervisor and what role they felt the Mentorwijs training had played in this. Most employees were satisfied with the guidance they received at the workplace, felt that no changes were necessary, and did not criticize their supervisor. However, not all employees were positive about the guidance and indicated that there was room for improvement.

Communication

One skill of a supervisor that was mentioned by each employee was communication. Many employees indicated that their supervisor had a clear and pleasant way of speaking. In addition, several employees indicated that they received clear explanations regarding work tasks. Clear communication was one point that made employees satisfied with the guidance they received at work. On the other hand,

communication from the supervisor did not always go well according to some employees, as there was occasional contradictory or unpleasant communication. Some employees also indicated that a supervisor did not or not properly fulfil his promises to provide new work tasks or new work clothes:

E5: "We often said: 'when do we get other clothes?' And then it was: 'yes it comes, it comes.' We are now two years later, and we still have the same clothes."(Woman, 21 years).

One employee also stated that he did not like it when the supervisor not directly communicates with him, but communicated with others about his work functioning. Several employees also stated that they had little contact with their supervisor:

E2: "I only see him (supervisor) in the morning at the workplace and I don't see him any further."(Man, 54 years).

Employees expressed different desires about the communication with their supervisor. For example, employees would like to talk with their supervisor now and then. Other employees desired a clearer explanation of their work tasks, because sometimes it was unclear how to perform their work. According to some employees, the Mentorwijs training had changed the communication of their supervisors. An employee mentioned that his supervisor communicated better.

Attitude

Employees were, in general, satisfied with the attitude of their supervisors towards them. What was mentioned most regarding this skill and what employees were very satisfied with when it comes to their guidance, was that employees' opinions were taken seriously:

E9: "You wouldn't say it because we all have a disability, but we are simply taken seriously."(Man, 53 years).

In addition, several employees indicated that their supervisors were friendly, reliable, and considerate to employees, and that they trusted the employee in that they performed their work tasks well. Negative experiences of employees were that some indicated that their supervisor had a negative attitude. Even though employees were generally satisfied with the attitude of supervisors, some employees with the same supervisor indicated the following areas for improvement for their supervisor: they would want their supervisor to give them more autonomy, be more considerate and more patient, not treat them as children, trust them more, and take them more seriously. These employees were,

in contrast to most of the other employees, not satisfied with their supervisor and many aspects of the guidance.

According to some employees, attitudes of supervisors had changed positively due to the Mentorwijs training. These employees were therefore very pleased that their supervisors followed the training. For example, an employee mentioned that his supervisor had become more relaxed, and another employee stated that supervisors who followed the training were very serious about the supervision. A change that was also noticed by some employees was that the supervisor kept a closer eye on the employee, and they talked and collaborated more with their supervisor when something was unclear.

Listening

Many employees stated that their supervisor listened carefully:

E1: "She (supervisor) also listens well. So, the moment I say that it doesn't work well, she can also take that into account" (Man, 30 years).

In contrast, some other employees mentioned that their supervisor was not listening well to their opinions or stated that a supervisor cut off criticism and that employees had little to say. They would like their supervisor to listen more:

E5: "I mean I am not a 12-year-old child. It would be nice if they listen more to us" (Woman, 21 years).

Dealing with Problems

Employees also described how they, as employees, deal with problems at the workplace. It became clear that when employees had a problem, they almost always went to their supervisor to discuss these problems. A problem was often picked up by the supervisor. For example, an employee described that he failed to complete his work tasks and was frustrated about this, but that his supervisor helped him to calm down:

E16: "Then they just try to say, 'yes there's no point in getting mad'. They say, 'just stay calm and then it will automatically be alright'." (Man, 36 years).

Most employees stated that supervisors were available to talk about problems. However, some employees were not satisfied, as their problems were not always addressed in a timely matter. Some employees stated that they wanted a supervisor that is willing to help employees with their problems.

Availability of Help

Employees also talked about the availability of help from supervisors. The majority was satisfied with the available help, as in almost every interview it was indicated that asking questions was always possible:

E16: "I always notice that if I have a question and they (supervisor) are in the office, I walk to the office and then I ask: 'would you like to help?'" (Man, 36 years).

This was an important reason for employees being satisfied with the guidance that they receive, because employees were happy to have the opportunity to receive help and that supervisors notice when employees need help. However, some employees stated that they needed to initiate asking for help. Moreover, an employee described that, despite the possibility to always ask questions, the supervisor had little time for the employee. Another employee said that due to pressure at work the supervisor was sometimes unable to ask questions when he did not understand his work tasks:

E7: "Sometimes he says: 'not now, can you come back later? I'm busy or I have to go to a meeting'. Then I have to wait." (Woman, 61 years).

Planned meetings between the supervisor and employee sometimes had been rescheduled due to a lack of time from the supervisor. Employees indicated that they would like their supervisor to always be available for questions and that they would like their supervisor to be more present in the workplace.

Appreciation

Appreciation was another skill that was regularly mentioned during the interviews. Employees indicated that they received appreciation and compliments for their work, and that compliments from supervisors gave them more motivation to work. One employee indicated that they received more compliments after the training. On the other hand, some employees mentioned that their supervisor showed little appreciation for their work because they received almost no compliment.

E5: "We walk like 36 or 40 hours per week, only by foot, walking, walking, walking, and then it's not even: 'guys you are doing a good job'." (Woman, 21 years).

"Mentorwijijs"

A number of abovementioned skills have changed and improved among supervisors by participating in the Mentorwijijs training. Employees mentioned in the interviews that there was a difference in skills after supervisors followed the training, but it was difficult for employees to identify what this difference was. Employees also remained satisfied with the guidance of their supervisors

after the training and, according to one employee, the supervisor said that he had learned which points he can improve on himself. However, most employees did not notice any difference in the guidance of supervisors after the training.

Discussion

We investigated the experiences of employees with a work disability about the guidance they receive from supervisors (who followed the Mentorwijs training), whether they notice differences in the guidance due to the Mentorwijs training, and what kind of aspects were important in the guidance for their sustainable employability. In general, employees enjoyed their work, but work tasks were sometimes not challenging enough, and they wanted more appreciation and compliments from their supervisor. Main reasons for satisfaction about the guidance were that help was often available, their opinions were taken seriously, and equality in the workplace. Other employees were dissatisfied, mainly because they wanted their supervisor to give them more autonomy, to be more considerate, and trust them more. In several areas, the satisfaction of work and guidance of supervisors can be further increased, which may also increase sustainable employability of employees with a work disability. These areas will be discussed below, as education for supervisors, such as the Mentorwijs training, could help supervisors to learn about and implement these elements in their daily practice.

Interpretation of the findings

Working conditions and working relations

Working conditions were not always pleasant according to employees with a work disability in this study. As mentioned earlier, employees with a work disability more often have a job insecurity (e.g. a flexible contract) than people without work disabilities (8). From literature, it is known that a supervisor is more inclined to invest in an employee with a permanent contract (24). This could be the reason why things like the right work clothing, but also training opportunities, were not always available for some employees with a work disability in this study. The difference between permanent and flexible contracts will therefore only widen the gap between employees with a work disability and employees without work disabilities (24), which can ultimately lead to reduced job satisfaction and sustainable employability. Another issue is that, although employees enjoyed their work, they also indicated it was sometimes not challenging enough. A key element of the Mentorwijs training is to ensure that employees enjoy going to work by strengthening their autonomy and not be too protective with them. Supervisors of employees with a work disability are therefore urged to provide good working conditions, including varying tasks and opportunities for growth, as will be discussed in the paragraph about opportunities and challenges.

Most employees were positive about relationships at the workplace, as they were treated equally and there was little hierarchy. This is also an important aspect in the Mentorwijs training, as supervisors learned to ensure equality at the workplace and to pay attention to possible frictions among employees. Social relationships at the workplace are known to increase job satisfaction (17), as being recognized and accepted contributes to the feeling of social inclusion (25). However, not all employees experienced that their relationships were positive, as some felt being treated unequal or due to unpleasant communication or conflicts about work tasks or conditions with supervisors and/or colleagues. The latter was also found in another study, where employees who perceived their working conditions unpleasant, believed they were treated differently compared to their colleagues (25). Therefore, open and equal communication between employees and supervisors about problems or possible adjustments to work tasks and conditions appears important (21, 25). This may lead to a better work climate and more positive relationships (21, 25), which was also experienced by employees in this study.

Opportunities and challenges

To create opportunities for development and to find challenges for the employees is part of the Mentorwijs training. However, one of the desires employees with a work disability had in this study was to learn new work tasks and to get the opportunity to develop themselves. This finding is supported by existing literature; for example a review showing consistent evidence that the opportunity for personal growth and development increases job satisfaction (17). Another study on the experiences of employees with a work disability concluded that the feeling of being valued depends on the extent to which employees are provided with opportunities that enable personal development (25). This increases the valuable work component of sustainable employability and may therefore also improve sustainable employability of employees with a work disability. This is in line with studies that showed that having the possibility to and learn new skills and work tasks may increase sustainable employability among employees with a work disability (21, 26).

Skills of the supervisor

Important skills of the supervisor that, according to the interviewees, could improve the guidance were communication, attitude, listening, dealing with problems, availability of help and appreciation. During the interviews, it became clear that some employees noticed positive changes in the skills among supervisors who followed the Mentorwijs training, which aimed to improve supervisors' knowledge, attitude, and skills (4). Positive changes were, among other things, improved communication between the supervisor and employee, receiving compliments, and that the supervisor and employee were more

considerate to each other. These skills are part of the Mentorwijs training, as supervisors learn about different leadership styles, communication techniques, how to give feedback and how their own attitude may affect the employability of employees. However, most employees did not have a strong opinion about the effect of the Mentorwijs training for their supervisor, as they did not notice any (negative or positive) difference in the guidance after the training. Our findings therefore do not provide strong evidence that the Mentorwijs training did change the guidance of employees with a work disability. Further research must provide more insight into the extent to which the Mentorwijs training improves the guidance of employees with a work disability.

In general, employees felt that their supervisors communicated clearly, but sometimes there was contradictory or unpleasant communication. Communication from the supervisor to employees with a work disability must be clear and understandable, as unclear communication could lead to conflicts between supervisors and employees in case employees cannot meet the supervisors' expectations (21). The challenge for supervisors is to set clear expectations and give concrete instructions about work tasks. This is in line with previous research showing that good and open communication between the supervisor and the employee is important to discuss adjustments of work tasks or in the work environment (21, 25), as this may increase job satisfaction and thereby sustainable employability of employees with a work disability (27).

Employees in our study generally spoke positively about the attitude of supervisors. It is important that supervisors maintain this attitude because research showed that negative attitudes from the supervisor to employees has a negative influence on sustainable employability (28). However, employees that we interviewed indicated that the attitude of their supervisor was not always good. An earlier study showed that supervisors tend to have negative attitudes about employees with a work disability, which is mostly caused by the concern that employees would be less productive (9, 10, 29). This could lead to supervisors closely observing employees on their work performance. As was described by employees in our study, this can negatively impact employee's satisfaction as employees described that they wanted their supervisors to give them more autonomy, trust them more and take them more seriously. Moreover, research on U.S. veterans and their supervisors showed that when supervisors' attitudes toward veterans improve, the veterans' sleep and health outcomes also improve (30). Although this concerns a different target group, it does show how much effect a supervisor's attitude can have on employees.

Employees in our study also found compliments and appreciation important, and they wanted more appreciation for the work they were doing. Earlier research

found that employees needed compliments and appreciation from their supervisors for the work tasks they performed, while they also liked to receive compliments and appreciation from their colleagues in similar occupations (31). This increases the feeling of being valued, which can lead to higher job satisfaction (31, 32). Receiving more compliments and appreciation from supervisors, but also from colleagues, could therefore increase sustainable employability of employees with a work disability.

Strengths and limitations

Several strengths and limitations were identified in this study. A strength of this study was that the interviews took place in different types of industries, resulting in a sample of employees from different occupations. In addition, employees had various work disabilities and there was a wide age range. The variation in industries, occupations, work disabilities, and the broad age range increased the generalizability of the results. However, due to using convenience sampling, our sample is not necessarily representative for the group of employees with work disability. Moreover, employees were recruited by their supervisors and interviews were conducted at the workplace. Despite the actions we have taken to ensure that employees felt comfortable to be fully transparent about their thoughts and feelings, there is a possibility they may not have felt comfortable to talk openly about the guidance. Another limitation is that it was difficult to interview employees about their work and guidance, because sometimes the questions were not understood by employees, the answers were short or unclear and the question for clarification or underlying reasons of an answer could not always be answered. Moreover, transcripts were not returned to the employees and no member check took place. To increase the credibility of the results we conducted the data-collection and data-analysis with multiple researchers. Another strength of this study is that the interviews were conducted at least 3 months after supervisors completed the Mentorwijs training. We used this time frame to be more assured that changes have taken place in the guidance of employees due to the Mentorwijs training. However, supervisors may need more time to change the guidance of employees with a work disability. Also, due to the qualitative study design, changes are not necessarily causally linked with the Mentorwijs training. For example, behavioral changes may also be caused by changes in the organization's broader climate and culture. To determine a causal relationship between the training and changes in the guidance other, more quantitative controlled, study designs are needed in future research. Employees also found it difficult to notice changes due to the Mentorwijs training. During the interviews it became clear that some employees were not even aware that their supervisor had completed the Mentorwijs training and others had not been employed long enough to notice a clear difference between the guidance before and after the training. Besides, it remains the question whether employees

with a work disability, for example a mild mental disability or learning delay, can sufficiently reflect on, notice, and name possible changes. It is therefore possible that changes in guidance because of the Mentorwijs training have taken place, but not have been noticed by employees with a work disability. Despite these difficulties, attempts have been made to obtain information from employees with a work disability. For example, the questions were easily formulated, the interviews took place in a familiar environment, and in most of the interviews (7 out of 10) employees were together with at least one colleague.

Implications for research and practice

Further research on employees with a work disability should focus on how the working environment can be improved, and how supervisors can be convinced of hiring and investing in employees with a work disability. Further research should also focus on how supervisors can recognize the desires of employees to learn new skills and/or work tasks, how to provide these opportunities, and how they can create a safe environment where there is room for employees to make mistakes. This could facilitate a work climate wherein employees can informally learn and develop themselves, which likely increases the sustainable employability (21). However, for supervisors to create a learning work climate, it is important they receive support at organizational level – e.g. that organizations have policies on training and development, or supporting technologies to facilitate learning (33). Moreover, from this study, it is not clear whether the size of the company or type of workplaces influences the guidance of supervisors, while research shows that this could have an effect on employment (34). Studies that examined the differences between supported and sheltered workplaces showed that employees in supported workplaces are more satisfied with their job than employees in sheltered workplaces (17). According to the Dutch system, sheltered workplaces create jobs for employees with a work disability that are not able to work in the regular labor market. Supported workplaces are jobs for employees with a work disability in the regular labor market, but wherein these employees receive support related to their disability (e.g. job coaching, training). Therefore, it is important to do more research on the size and type of workplaces of employees with a work disability, as this could also influence the guidance they receive from supervisors. At last, this research focuses on the guidance of employees with a work disability in relation to sustainable employability. However, the private situation of the employee also plays a major role in their employability (21), as problems (e.g. unhealthy living conditions or financial problems) in the private situation may have direct negative effects on the employability of workers. Therefore, to adequately improve sustainable employability, future research should also focus on how supervisors can deal with problems in the private situation that affect the employability of employees with a work disability.

This research also showed that there were some points for improvement for supervisors about the guidance of employees with a work disability, namely providing challenges in work tasks and opportunities for growth, appreciation and giving compliments to employees, investing in employees' autonomy, that employees are taking seriously, and improve communication of supervisors. An addition to the training could, for example, be how supervisors should deal with employees who want more challenge in their work tasks and how supervisors can better distribute their attention and time so that employees can receive more personal attention. In addition, the training can emphasize that giving compliments and expressing appreciation is extremely important for employees and that it is important to have good and open communication with employees to facilitate adequate adjustments to work tasks and conditions. How to deal with these points of improvement can be applied in Mentorwijs or other related trainings for supervisors of employees with a work disability. Improving the training can increase employees' satisfaction about their job and guidance, after their supervisors have completed this training, and thus improve sustainable employability.

Conclusions

Our findings indicate that employees were, in general, very satisfied with the guidance of supervisors who followed the Mentorwijs training and believed that not much needed to be changed in their guidance. Possibly because of this, changes in the guidance were hardly noticed by many employees. Also, because they may not be aware of the exact content of the Mentorwijs training. Despite this, several aspects in the guidance of supervisors were identified that affect the sustainable employability of employees with a work disability. To improve sustainable employability of employees with a work disability, training of supervisors in guidance of these employees should focus more on adequate work conditions, opportunities for development and improving supervisors' skills regarding appreciation, attitude, and communication.

References

1. Waddell G, Burton AK. Is work good for your health and well-being? TSO; 2006.
2. Urtasun A, Nuñez I. Healthy working days: The (positive) effect of work effort on occupational health from a human capital approach. *Social Science & Medicine*. 2018;202:79–88.
3. Wanberg CR. The Individual Experience of Unemployment. *Annual Review of Psychology*. 2012;63:369–96.
4. Hazelzet AM, van de Ven HA, de Wolff MS, Eversen F, van der Wal J, Andriessen S. *Handboek Mentorwijs. Een training voor leidinggevenden van kwetsbare medewerkers*. Leiden: TNO; 2017.
5. Berendsen E, Van Deursen C, Dumhs L, Stoutjesdijk M. *UWV Monitor Arbeidsparticipatie Arbeidsbeperkten 2020*. Amsterdam: UWV; 2021.
6. Bureau of Labor Statistics. Persons with a disability: Labor force statistics 2020 [Available from: <https://www.bls.gov/news.release/pdf/disabl.pdf>].
7. Colella AJ, Bruyère SM. Disability and employment: New directions for industrial and organizational psychology. *APA Handbook of industrial and organizational psychology*. Washington DC: American Psychological Association; 2011.
8. Sorgdrager B, Otto W. Re-integratie is meer dan beoordelen: sta op voor de werknemer! *Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde*. 2016;24(8):357–8.
9. Strindlund L, Abrandt-Dahlgren M, Ståhl C. Employers' views on disability, employability, and labor market inclusion: a phenomenographic study. *Disability and Rehabilitation*. 2019;41(24):2910–7.
10. Hulsegge G, Otten W, van den Ven HA, van den Tooren M, Putnik K, Blonk RW, et al. *Ontwikkeling en Validering Vragenlijst Inclusief Ondernemen: Een instrument om factoren die samenhangen met inclusief werkgeversgedrag te meten*. Leiden: TNO; 2020.
11. Ybema JF, van Vuuren T, van Dam K. HR practices for enhancing sustainable employability: implementation, use, and outcomes. *The International Journal of Human Resource Management*. 2020;31(7):886–907.
12. Hazelzet E, Picco E, Houkes I, Bosma H, de Rijk A. Effectiveness of Interventions to Promote Sustainable Employability: A Systematic Review. *International Journal of Environmental Research and Public Health*. 2019;16(11):1985.
13. Van der Klink JJL, Bültmann U, Burdorf A, Schaufeli WB, Zijlstra FR, Abma FI, et al. Sustainable employability - definition, conceptualization, and implications: A perspective based on the capability approach. *Scandinavian Journal of Work, Environment & Health*. 2016;42(1):71–9.
14. Schreuder JA, Groothoff JW, Jongsma D, van Zweeden NF, van der Klink JJ, Roelen CA. Leadership Effectiveness: A Supervisor's Approach to Manage Return to Work. *Journal of Occupational Rehabilitation*. 2013;23(3):428–37.
15. Dolce JN, Bates FM. Hiring and employing individuals with psychiatric disabilities: Focus groups with human resource professionals. *Journal of Occupational Rehabilitation*. 2019;50(1):85–93.
16. Vornholt K, Villotti P, Muschalla B, Bauer J, Colella A, Zijlstra F, et al. Disability and employment – overview and highlights. *European Journal of Work and Organizational Psychology*. 2018;27(1):40–55.

17. Kocman A, Weber G. Job, Satisfaction Quality of Work Life and Work Motivation in Employees with Intellectual Disability: A Systematic Review. *Journal of Applied Research in Intellectual Disabilities*. 2018;31(1):1-22.
18. Khayatzadeh-Mahani A, Wittevrongel K, Nicholas DB, Zwicker JD. Prioritizing barriers and solutions to improve employment for persons with developmental disabilities. *Disability and Rehabilitation*. 2020;42(19):2696-706.
19. Landelijk Trial Register. Training for supervisors to improve sustainable employment of vulnerable employees – an effectiveness study. Identifier Trial NL7901 2019 [Available from: <https://www.trialregister.nl/trial/7901>].
20. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007;19(6):349-57.
21. Vooijs M, Putnik K, Hermans L, Fermin B, Hazelzet AM, van Genabeek JA. Duurzame plaatsing in werk van werknemers met een arbeidsbeperking. Leiden: TNO; 2019.
22. Green J, Thorogood N. *Qualitative Methods for Health Research*. 4th Edition. London: Sage; 2018.
23. Clarke V, Braun V. Thematic Analysis. *Encyclopedia of Critical Psychology*. New York: Springer; 2014.
24. Smit A, Oden P. Werken met een beperking: nog een wereld te winnen: ervaringen en behoeften van mensen met een arbeidsbeperking op de arbeidsmarkt. *Sociaal bestek*. 2018;80(1):58-60.
25. Gustafsson J, Peralta J, Danermark B. Supported Employment and Social Inclusion: Experiences of Workers with Disabilities in Wage Subsidized Employment in Sweden. *Scandinavian Journal of Disability Research*. 2018;20(1):26-36.
26. Audenaert M, van der Heijden B, Conway N, Crucke S, Decramer A. Vulnerable Workers' Employability Competences: The Role of Establishing Clear Expectations, Developmental Inducements, and Social Organizational Goals. *Journal of Business Ethics*. 2020;166:627-41.
27. Hazelzet E, Houkes I, Bosma H, de Rijk A. Using intervention mapping to develop 'Healthy HR' aimed at improving sustainable employability of low-educated employees. *BMC Public Health*. 2021;21:1259.
28. Van Beukering IE, Smits SJ, Janssens KM, Bogaers RI, Joosen MC, Bakker M, et al. In what ways does health related stigma affect sustainable employment and well-being at work? A systematic review. *Journal of Occupational Rehabilitation*. 2022;32(3):365-79.
29. Hulsegge G, Hazelzet AM. Inclusief werkgeversgedrag Helmond-De-Peel. Regionale arbeidsmarktanalyse. Leiden: TNO; 2021.
30. Hammer LB, Brady JM, Perry ML. Training supervisors to support veterans at work: Effects on supervisor attitudes and employee sleep and stress. *Journal of Occupational and Organizational Psychology*. 2019;93(2):273-301.
31. Akkerman A, Janssen CG, Kef S, Meininger HP. Perspectives of Employees with Intellectual Disabilities on Themes Relevant to Their Job Satisfaction. An Explorative Study using Photovoice. *Journal of Applied Research in Intellectual Disabilities*. 2014;27(6):542-54.
32. Pfister IB, Jacobshagen N, Kälin W, Semmer NK. How does appreciation lead to higher job satisfaction? *Journal of Managerial Psychology*. 2020;35(6):465-79.
33. Van der Torre W, Verbiest SE, Preenen PT, van den Tooren M, van den Bergh R, Koopmans L. *Lerende en innovatieve organisaties: een organisatiemodel met praktijkvoorbeelden*. Leiden: TNO; 2019.

34. Van Ooijen R, Koning PW, Boot CR, Brouwer S. The contribution of employer characteristics to continued employment of employees with residual work capacity: evidence from register data in The Netherlands. *Scandinavian Journal of Work, Environment & Health*. 2021;47(6):435-45

Supplementary files

Supplementary file 1: Interview guide

Questions

1. What kind of work do you do? Or: What kind of work tasks do you have?

Topic 1: Job satisfaction

2. What do you think of your work?
 - a. Do you like this job?
 - b. What do you like or do not like about this job?
 - c. Do you enjoy going to work?
 - d. Would you like to do this work for a longer period of time?

Topic 2: Guidance satisfaction

3. What do you think of the guidance at work by your supervisor?
 - a. Why are you satisfied or not satisfied?
4. What do you like/ not like about the supervision?
5. Why is your supervisor a good or not a good supervisor?
 - a. What is your supervisor doing right/wrong?
6. What kind of qualities/skills does a perfect supervisor have?
 - a. Which qualities should a supervisor have to guide you at the workplace?
 - b. Which qualities should a supervisor not have to guide you at the workplace?

Topic 3: Change in guidance after the 'Mentorwijs' training

7. Has the guidance changed/improved in recent months?
8. What kind of improvements/changes did you notice?

Topic 4 & 5: Fit between knowledge and skills and the demands of the job and confidence performance of the job

9. What do you think about your work tasks?
 - a. Do you know how to perform your work tasks?
 - b. Do you feel confident that you can perform your work tasks in the right way?
 - c. Can you perform your work tasks independently?
10. Does your supervisor help you with performing your work tasks?
 - a. How does your supervisor help you?
 - b. Made your supervisor adjustments at work so that you perform your work tasks?
11. If you are unable to complete a work task, what do you do?
 - a. Do you ask your supervisor for help? Are you able to ask for help?
 - b. Would you like extra help from your supervisor? And what kind of help?

12. Do you ever have problems at work?
 - a. What do you do in case there are problems? How do you solve these problems?
 - b. Can you/do you go to your supervisor?
 - c. Does your supervisor help you with solving problems? And in which way?
 - d. Does your supervisor notice if there are problems?
13. Do you have the opportunity to learn new things and/or to grow at work?
 - a. Are your work tasks easy? Or too difficult?
 - b. Are your work tasks complicated? Or too monotonous?
 - c. Do you have the ability to perform other work tasks?

Topic 6: Position in the company

14. Do you feel that you are taken seriously at work?
 - a. Do you feel that you are appreciated/accepted at work?
15. Do you feel that you are equal to your colleagues?
 - a. Are you the only employee in the company with work disability?
 - b. Do you feel you are treated differently than your colleagues at work?
 - c. Do you feel that your colleagues or your supervisor listens to you?

Supplementary file 2. Codebook

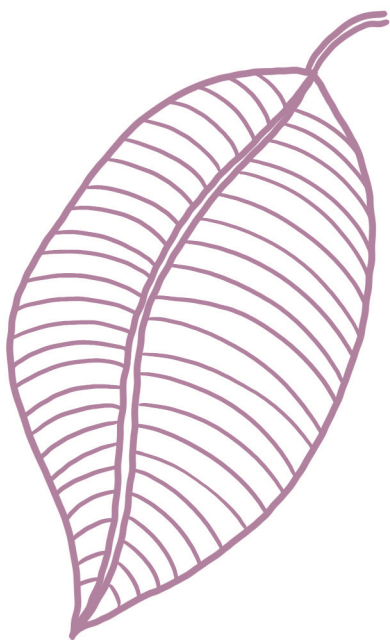
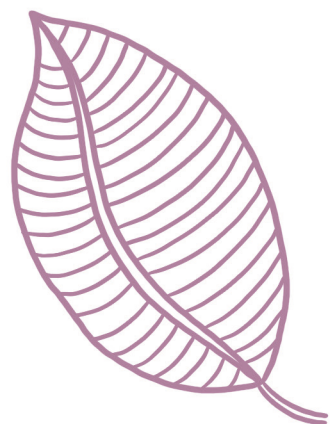
Theme	Sub-code	Codes
Work tasks and conditions can facilitate or hinder sustainable employability	Facilitators of work(tasks) and working conditions for sustainable employability	Fun at work
		Work is routine/easy
		Enjoyable atmosphere
		To be able to perform work tasks independently
		No workload at work
		A lot of freedom at work
		Employees want to work for a long period of time
		A lot of variation in work tasks
		Work tasks are easy
	A lot of structure	
	Adjustments made for employee	
	Perform work tasks step-by-step	
	Barriers of work(tasks) and working conditions for sustainable employability	Work sometimes energy consuming
		Work tasks sometimes boring
		Work is monotonous
		A lot of work hours
		Hard working
		Difficult working conditions
		Cleaning up mess of others
Difficult working conditions		
Not have proper work clothes		
Work tasks with long concentration difficult		
Needs for work(tasks) and working conditions	Employee wants to feel useful at work	
	Employee wants more structure at work	
	Employee needs more variation	
	Employee does not want repetitive work tasks	
	Employee wants more responsibility	
Employee wants work with societal relevance		

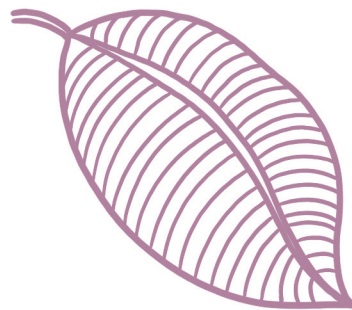
Theme	Sub-code	Codes
Relationships among employees and with supervisors can affect sustainable employability	Positive relationship with colleagues	Good collaboration
		Get on well together
		Equality at the workplace
		No hierarchy
		Colleagues with a lot of experience
		Never conflicts
		Colleagues want to help each other
	Positive relationship with supervisor	A lot of understanding from supervisor/organization
		Solving conflicts through talking
		Conflicts quickly resolved
		After training more collaboration and more considerate of each other
	Negative relationship with colleagues	Sometimes no equality
		Arguing or irritations with each other
		Gossip among each other
		Not getting along with each other
Conflicts occur		
Negative relationship with supervisor	Hates supervisor	
	Supervisor must not treat employee like a child	
	Conflicts with supervisor	
A desire for new opportunities and challenges	Desires for new opportunities and challenges	Employees wants challenging work
		Employee wants to be able to grow
		Employee wants to learn new work tasks
	Opportunities to learn and to get new challenges	Work is educational
		Work is challenging
		Opportunities to learn new work tasks
		Making mistakes is allowed
		There are growth opportunities
		Learning step-by-step
		Employee do not often get chances to grow/learn

Theme	Sub-code	Codes
A need for supervisor skills to facilitate sustainable employability	Communication; positive points	Pleasant way of communicating Clear explanation of supervisor After training better communication
	Communication; negative points	Not talking about employees, but with employees Communicate more clearly At the beginning more explanation about work tasks Need clear communication about work task No communication between supervisors Communication contradictory Not a pleasant way of communicating Need of a chat now and then Little contact with supervisor Promises not kept Do not receive compliments
	Attitude; positive points	Supervisor is friendly
		Supervisor is reliable
		Employee is taken seriously
		Supervisor considerate employees
		Important that a supervisor is patient
		After training supervisor became more relaxed
	Attitude; negative points	After training supervisor kept closer eye on employee and more collaboration
		Employees are not taken seriously
		Supervisor need to be more considerate with employees
		Employees expect more trust from supervisor
	Attitude; negative points	Supervisor is negative/not fun
		Supervisor is impatient
		Supervisors listen well
Listening; positive points		

Theme	Sub-code	Codes
	Listening; negative points	Supervisor does not listen well
		As employee very little to say
		Criticism is cut off
		Supervisor must listen more to opinion of employees
		Supervisors must be available to listen
	Dealing with problems; positive points	With a problem to the supervisor
		Problem picked up by supervisor
		Supervisor available to talk about problems
		Supervisor must be willing to help employee
	Dealing with problems; negative points	Problems not addressed by supervisor
	Availability of help; positive points	Help always available
		Asking questions always available
		Supervisor notices when help is needed
	Availability of help; negative points	Due to pressure at work not possible or waiting to ask questions
		Supervisor lack of time
		Sometimes in need of more help
		On own initiative asking for help
		Supervisor should be more available
		Supervisor must be available to ask questions
	Appreciation; positive points	Appreciation for work
		Receiving compliments for work
		Supervisor provides (positive) feedback
		More motivation through receiving compliments
		After training more compliments
	Appreciation; negative points	A lack of appreciation
		Need more appreciation
		Need more compliments

Theme	Sub-code	Codes
	Mentorwijs	Did not notice any change after the training in guidance of supervisors
		Remained satisfied about supervision after training
		Training was informative for supervisor
		Noticed a difference after the training





Chapter 7

Training for supervisors to improve sustainable employment of employees with a work disability: a longitudinal effect and process evaluation from an intervention study with matched controls

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Abstract

Purpose: Supervisors play a crucial role in sustainable employment of employees with a work disability. The 'Mentorwijijs' (literal translation: Mentorwise) training was developed to train supervisors in knowledge, attitudes and skills needed to guide these employees. This study evaluated the effect of 'Mentorwijijs' on employees' employment and supervisors' behavioral outcomes.

Methods: Register- and questionnaire data were obtained from 73 employees and 1,526 matched controls to measure employment (≥ 1 /month, ≥ 12 hour/week and ≥ 3 consecutive months (≥ 1 hour/month)) during a 12-month follow-up period. Questionnaire data were obtained from 127 supervisors who followed the 'Mentorwijijs' training, to assess their knowledge, self-efficacy, intention to adopt and applied behaviors.

Results: Employment for ≥ 1 hour/month did not significantly improve after 3 ($\beta=0.05$; CI=-0.07-0.16), 6 ($\beta=0.07$; CI=-0.04-0.18), 9 ($\beta=0.08$; CI=-0.02-0.18) and 12 ($\beta=0.01$; CI=-0.08-0.10) months among employees whose supervisors followed 'Mentorwijijs' compared to those who did not. Significant effects were found after 8 months ($\beta=0.11$; CI=0.01-0.21). Comparable effects were found for employment ≥ 12 hour/week and ≥ 3 consecutive months (≥ 1 hour/month). Supervisors' knowledge and self-efficacy significantly improved as a result of 'Mentorwijijs', but no effects were found for intention to adopt and applied behaviors.

Conclusions: 'Mentorwijijs' is a promising training to improve the guidance of employees with a work disability. Further research is needed to examine how long-term effects of 'Mentorwijijs' on employment can be sustained.

Keywords: Employees; Work disability; Sustainable Employment; Supervisors; Effect evaluation.

Background

Employees with a work disability face more difficulties to maintain employed, as opposed to those without a work disability (1). Employees with a work disability could be hampered from finding or maintaining employed due to long-term illness, a disorder or disability, including (mild) intellectual disabilities, psychological frailty, physical disabilities, (very) low level of education and/or learning delay (2). In the Netherlands, around 800 thousand people between 15 and 65 years indicated in 2019 that they faced difficulties to find and perform work due to a work disability (1). Their unemployment rates are twice as high as in the general population (3). Therefore, sustainable employment – defined as the ability to make a valuable contribution through work, while learning skills, maintaining good health and well-being throughout the working life (4) – remains a challenge among employees with a work disability.

Ample research indicates that supervisors play a crucial role in sustainable employment of employees with a work disability (5-11). Barriers to remain employed were, for example, a lack of support from supervisors and colleagues and a lack of work accommodations (5). Supervisors can reduce these barriers by establishing a supportive environment, promoting acceptance and inclusion of employees with a disability, and enabling workplace accommodations. Other barriers were feeling incompetent, overqualified to execute work tasks or a lack of opportunities to learn new skills (5, 9). Supervisors can reduce these barriers by giving appropriate feedback, providing clear task instructions, and facilitating a work climate wherein employees can perform work tasks at their own pace and can learn from mistakes. However, to change behaviors and take away barriers, supervisors need specific knowledge, attitudes, and skills for the guidance of employees with a work disability. They need to understand that employees with a work disability may have, for example, a lower work pace, than employees without a work disability (2). Furthermore, some supervisors tend to take the role of a care provider, hindering employees to develop themselves. In such circumstances, it could be more important for supervisors not to focus on the disability and limitations, but on the competences and qualities of employees (2). Based on these findings, it is likely that training supervisors in the guidance of employees with a work disability can improve their sustainable employability.

Previous research on training supervisors in the guidance of employees show that such trainings could lead to earlier return to work and reduced sick leave among employees, compared to employees whose supervisor was not trained (yet) (12, 13). However, these studies focus on the general working population. 'Mentorwijs' (literal translation: Mentorwise) is a training developed to improve the guidance of supervisors of specifically employees with a work disability (2).

Evidence on the effectiveness of 'Mentorwijs' is, however, lacking. Also, more insight is needed on which employee and supervisors' characteristics enhance or decrease the effectiveness of 'Mentorwijs', and how the implementation of this training proceeds. Based on these research gaps the aims of this study were to investigate 1) the effect of 'Mentorwijs' on sustainable employment of employees with a work disability, 2) the extent to which this effectiveness is affected by characteristics of employees and supervisors, 3) the effect of 'Mentorwijs' on supervisor guidance and 4) the implementation process of 'Mentorwijs'.

Methods

Study design

We conducted an intervention study that consisted of an effect and process evaluation among employees with a work disability (and a matched controls comparison group) and their supervisors who followed 'Mentorwijs'. The effect evaluation among employees (i.e. aim 1 and 2) were conducted using questionnaire data completed by employees and register data from Statistics Netherlands. The effect and process evaluation among supervisors (i.e. aim 3 and 4) were conducted by the use of questionnaire data that were completed by supervisors. The Medical Ethics Committee of Amsterdam UMC (location VUmc) decided that the Medical Research Involving Human Subjects Act does not apply to this study (reference no. 2019.239). All participants who participated in this study provided informed consent. This study was registered in the Dutch Trial Register (Trial NL7901, 2019) (14). The Consolidated Standards of Reporting Trials (CONSORT) was used as guideline to report this study (15).

Intervention

'Mentorwijs' aims to develop and strengthen knowledge, attitudes, and skills of supervisors who guide employees with a work disability. A central element of the training is to strengthen self-efficacy, meaning that supervisors develop confidence that they have the knowledge and skills to adequately guide employees with a work disability. Furthermore, supervisors are trained on how to consider the work disability, while also taking the employee seriously and let them fully participate in a team where they can be equal to regular employees in the company. A more detailed description of the development and theoretical background of the intervention has been published elsewhere (2), but the specific goals and sub-goals of the training are described in table 1. 'Mentorwijs' focuses on supervisors that guide employees with a work disability on a daily basis, as supervisors give work instructions and monitor the execution of work tasks. 'Mentorwijs' is a relatively short and practical training that consists of five weekly meetings of 2.5 hours, each with specific learning objectives. The training was provided by Dutch municipalities and was free of charge for supervisors and involved

organizations. Between 8 to 18 supervisors were expected to participate in each training. Each training was provided by two trainers who worked in a municipal organization. These organizations have the duty to enact the Participation Act (Participatiewet, in Dutch) which aims to help people with a disability to find a job, maintain employed and to support employers by wage subsidies, job coaches, trial placements or other forms of (financial) support. Supervisors enrolled in different ways for the training; through their employer or on an individual basis directly at the municipal organizations. The trainers did not need specific education to be able to provide the training, but were experienced trainers in the field of work and social security and were trained to provide the 'Mentorwijz' training. Homogeneity across training sites was assured by a train-the-trainer program and a handbook of 'Mentorwijz'. During the training there was variation between theoretical and practical work forms, where providing knowledge to supervisors was alternated with practical exercises to apply new knowledge. Methods that were applied in the training varied from lecturers, group discussions, case presentations, and role playing with ample opportunity for interaction between supervisors. Supervisors could bring up questions and cases from their daily practice, and worked preferably in different companies so they could share and exchange experiences with each other.

Table 1. Goals and sub-goals of 'Mentorwijz'

Goal	Sub-goals
Knowledge: learning about work disabilities and how to deal with these disabilities	Knowledge about: <ul style="list-style-type: none"> • Various (common) psychological disabilities • Possible work adjustments for these disabilities • Support that can be offered by different stakeholders from municipalities (e.g. job coaches) • Which questions you can and may ask the employee prior to employment to gain insight into the employees' qualities and limitations • Different leadership styles and which of these styles match the wishes and needs of an employee • Communication techniques (listening, summarizing, asking open questions)

Table 1. Goals and sub-goals of 'Mentorwĳs'

Goal	Sub-goals
Attitude: teaching how to maintain an open and involved attitude that increases the autonomy of employees	<ul style="list-style-type: none"> • Accept that employees have limitations to take into account, but not to overprotect • Have affinity with employees and wanting to take time to enhance work participation • Want to ensure that the employee enjoys going to work: feels heard, feels included • Being open to signals that indicate the employee is not doing well and ask about this in a positive way that is safe for the employee • Pay attention to possible frictions between employees with disabilities and regular employees: take initiative to discuss this in time • Pay attention to clarity and involvement of employees • Have an open and involved attitude towards the employee, without taking the role of a care provider • Make sure employees feel that you (are open to) listen to them • Have good observations skills without judgement
Skills: teaching specific skills regarding work and communication	<p>Being able to:</p> <ul style="list-style-type: none"> • Translate limitations into work adaptations: supervisors know how limitations affect daily functioning at the workplace, what kind of support employees need, which tasks employees can perform and which work adaptations are possible and needed • Create development opportunities for the employee, for example by organizing their work in a certain way • Use a transformational leadership style: motivate and encourage the employee in a respectful and honest manner • Find challenges for the employee, for example by letting the employee do other work tasks • Create support in the workplace/being able to deal with resistance • Observe/(timely) identify problems and being able to solve them, conflict management • Disseminate information about the employee to colleagues (in coordination with the employee) • Work together with external parties such as counselors from the municipality • Have a learning orientation: willing and able to exchange experiences and knowledge with others • Being a point of contact in the workplace for employees and colleagues • Identify and apply techniques for observing employees: being able to observe employees and recognize different competencies • Provide feedback in a constructive manner, use feedback to reduce resistance and to discuss the behavior of the employee • Identify which style of leadership or communication technique matches an employee • Contribute to improve the employee's functioning and thereby create added value for the company

Recruitment

'Mentorwijs' is implemented by different municipal organizations in the Netherlands. A total of 164 supervisors who guide employees with a work disability and signed up to follow 'Mentorwijs' between May 2019 and January 2021 were invited to participate in this study. Supervisors worked in different organizations in the Netherlands in the regions Rivierenland, Helmond-De Peel and Foodvalley, that employ employees with a work disability in sheltered workplaces and/or in the regular labor market. At the start of the training, researchers informed all 164 supervisors about the aim and methods of the study, and thereafter invited supervisors to participate in this study. If they agreed to participate, they provided informed consent and were asked to complete a baseline questionnaire at the start of the training. The follow-up questionnaires were completed online. Supervisors were also asked to help recruit employees with a work disability that they guided at the workplace. For every supervisor we aimed to recruit at least one employee with a work disability they guide at the workplace. However, it is unclear how many employees were invited to participate in this study. Supervisors asked their employees with a work disability whether the researchers could visit their workplace and to inform them about the study. After employees signed informed consent, they were asked to complete a short questionnaire to, among other things, obtain information to identify employees in register data.

Questionnaire data-collection among employees

Baseline questionnaires were completed by employees with a work disability between the start (T0) and completion of the training (T1), as employees were recruited through their supervisor who already started with the training. The questionnaire provided information on general characteristics of employees, type of work, type of work disability, work ability (i.e. based on the work ability index)(16) and work satisfaction.

Register data-collection among employees

We used register data to gain more knowledge on sustainable employment of employees with a work disability whose supervisors participated in 'Mentorwijs' and from a matched control group of employees whose supervisors did not participate in 'Mentorwijs'. Register data from Statistics Netherlands (CBS) on employment were available before and after the end of the training and were calculated on a monthly basis, up to 12 months. Primary outcome measures for sustainable employment were 1) being employed for at least 1 hour per month, 2) being employed for at least 12 hours per week, and 3) being employed for at least 3 consecutive months (≥ 1 hour/month). Secondary outcome measures for those in employment were type of contract, number of working hours per week and wage per hour. Also, background characteristics of employees, job

characteristics and employment and social security history were available from Statistics Netherlands.

Intervention and control group of employees with a work disability

Register data was used to match the 'Mentorwijs' group to a similar group of employees. Therefore, we selected employees in similar regions for Foodvalley (Stedendriehoek & Noord-West Veluwe), Rivierenland (Noord-Oost Brabant) and Helmond-De Peel (Noord-Limburg) and collected personal and current job characteristics as well as information on individual employment and social security history.

In the regions where 'Mentorwijs' was provided to supervisors we did not have an overview of which employees have a supervisor who did or did not follow the training. Therefore, employees in the control group were selected from other, comparable, regions as the ones in the intervention group, to make sure that employees were not guided by a supervisor who followed 'Mentorwijs'. We matched on the following characteristics: sex, age, region, educational level, ethnical background, work history in 12 months before intervention, number of years in current job, unemployment or social assistance benefit as main income during at least 1 month in 12 months before intervention, sickness or disability benefits as main income during at least 1 month in 12 months before intervention, temporary contract, sector of economic activity, total number of employees of the employer, indicator semi-sheltered sector (i.e. sheltered workplace) and wage level. We used propensity score matching (nearest neighbor) with common support, because exact matching would have led to an additional loss of 20 'Mentorwijs' employees that could not be matched.

Questionnaire data-collection among supervisors

Self-reported questionnaires were used to obtain data on the effect and process of 'Mentorwijs' among supervisors who followed the training (i.e. aim 3 and 4). Questionnaires provided information on the personal and work characteristics of supervisors and outcome and process measures. Questionnaires were completed before the training (T0), directly after the training (T1) and 3 and 6 months after the end of the training (T2 & T3). Outcome measures for the effect evaluation were 1) determinants for behavior - i.e. knowledge regarding employees with a work disability and the supervision of this group and self-efficacy regarding the supervision of employees with a work disability, 2) intention to adopt behaviors regarding the supervision of employees with a work disability, and 3) the extent to which behaviors regarding the guidance of employees with a work disability were applied. Self-efficacy, intention to adopt and applied behaviors were, in accordance with the training, divided into attitudes and skills. For example, an item to measure attitude was that we asked supervisors whether they have self-

efficacy, intention to adopt and actually applied an open and involved attitude towards employees with a disability. An item to measure skills was, for example, that we asked supervisors whether they have self-efficacy, intention to adopt and actually applied a supporting environment at the workplace for employees with a work disability.

Reliability and validity were not tested, but items for each outcome measure were based on the 'Mentorwijs' theoretical handbook (2). The items in the questionnaire were aligned to the defined objectives and expected results in this theoretical handbook. Process measures (only measured after the training - T1) focused on factors that could affect the implementation of the training in practice: 1) dose delivered - i.e. to what extent was the intervention implemented as planned, 2) dose received - i.e. number of meetings followed, 3) satisfaction towards the training, 4) extra time spend on the guidance of employees with a disability, 5) and contextual factors on the level of the supervisor and organization, which were based on an existing instrument to measure determinants of innovations (17).

Statistical analysis

For aim 1 we applied a difference-in-difference estimation to the matched sample in Stata 14, which allowed us to estimate the causal effect of 'Mentorwijs'. The difference-in-difference estimation together with matching corrects for potential pre-treatment differences between the 'Mentorwijs' and control group. A similar approach has been followed by De Graaf-Zijl et al (2020) (18). In the analysis, every person in the control group is weighted according to their propensity score. The use of difference-in-difference techniques is only allowed if there is a common trend between Mentorwijs and the control group prior to the intervention. Tests showed that a placebo effect of Mentorwijs 6 months before the actual start of the intervention was not statistically significant for any of the outcome measures. This implies that the common trend hypothesis for using the difference-in-difference design has not been violated.

The model specification is:

$$Y_{it} = \tau_t + \sum_{t=1}^{12} \beta_t MW_i T_{it} + \sum_{t=-16}^{12} \gamma_t T_{it} + \epsilon_{it}$$

Where i is the individual employee and t calendar time. Y_{it} is the outcome of interest (employment status) for individual i in month t . Individuals have to be employed in month 0. Month 1 is the month of the end of the intervention or

fictional intervention in case i belongs to the control group. τ_t are quarterly calendar time dummies for each quarter and can capture business cycle and other time calendar time effects. MW_i is an indicator taking the value 1 if the individual is in the 'Mentorwijs' group. T_{it} are time dummies representing the month compared to the start of (fictive) treatment. ϵ_{it} is the error term. β_t and γ_t are parameters and is the effect of analysis time. Note that controls do not necessarily have to start in the same month as 'Mentorwijs' cases, meaning that calendar time and analysis time can differ. β_t is the parameter of interest, the estimate of the effect of 'Mentorwijs'. The beta is the difference in the change of the outcome between the intervention and control group in month t , with respect to the baseline measurement. For aim 2 we used the same main model but with interaction effects for subgroups.

For aim 3 we used mixed modeling in SPSS statistics 26 to estimate the change after 'Mentorwijs' on all outcome measures among supervisors, wherein time was used as a categorical independent variable and T0 was used as the reference category (model 1). This technique deals better with missing data than generalized estimation equations (GEE) and considers that repeated measurements are correlated (19). In a second model we tested for the following possible confounders 1) demographics (i.e. age, educational level, and sex), 2) number of years of experience with the guidance of employees with a work disability, 3) number of years employed at current employer, 4) company size, 5) number of employees they guide at the workplace and 6) number of employees with a work disability they guide at the workplace. Only confounders that changed the beta of the independent variable (i.e. time) with more than 10% were added to the model (model 2). In both models we estimated Beta coefficients (B) and 95% confidence intervals (CI). For aim 4 process evaluation data were analyzed using descriptive statistics (i.e. mean (SD) and percentage).

Results

Participants

We included 127 supervisors that followed 'Mentorwijs' and 118 employees with a work disability who were guided by these supervisors. Not every employee gave consent to be identified in the register data and not every employee could be identified in the register data. Therefore, register data were collected from 78 employees. Four employees were excluded from matching with controls, as they were not registered as having a job at baseline. One employee could not be matched with controls. In the end, 73 employees were matched with 1.526 controls. Figure 1 shows the flow diagram of the selection process of supervisors and employees in this study.

Characteristics of employees with a work disability

The results in the baseline questionnaire showed that employees in the intervention group had very different occupations ranging from industrial work (26%), service related (17%), transport related (6%), administrative work (6%), specialized work – e.g. ICT, draftsmen (4%), or in agriculture or landscaping (41%). All type of work disabilities were represented in the intervention group, 22% had a mild intellectual disability, 18% a psychological disability, 35% a physical disability, 25% a low level of education/learning delay and for 19% the work disability was unknown. The work ability was often good or excellent (62%) and the mean work ability in relation to job demands was 6.0 (SD 0.9) on a scale from 2-10. The majority was satisfied or very satisfied (81%) with their work. In table 2, characteristics of employees in the intervention and control group in register data are presented.

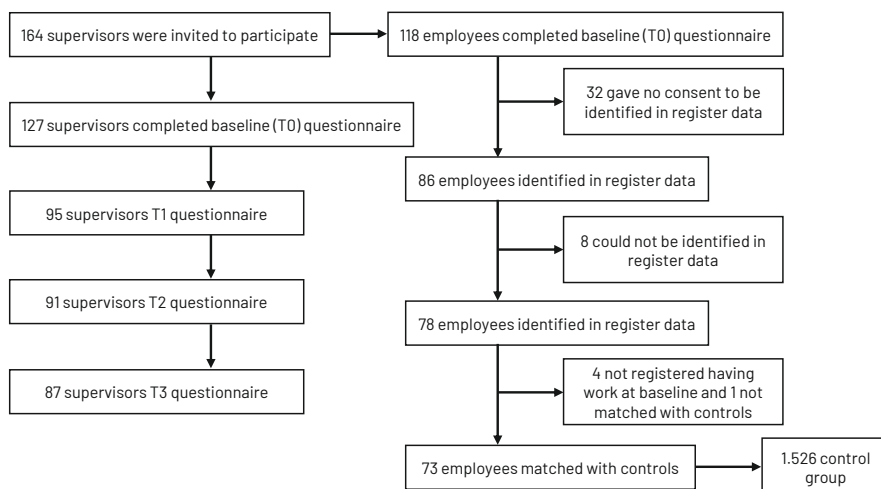


Figure 1: Flow diagram of supervisors and employees involved in this study

Table 2. Characteristics of employees with a work disability in register data

Characteristics	N=73; %/mean (SD) intervention group register data	N=1526; %/mean (SD) control group register data
Sex		
Male	77%	75%
Female	23%	25%
Mean Age		
	44.8 (13.4)	43.5 (13.8)
Educational level		
Low	53%	53%
High	27%	28%
Unknown	20%	19%
Ethnic background		
Western/no migration background	86%	90%
Non-western/migration background	14%	10%
Region (Intervention vs. control)		
Foodvalley / Stedendriehoek & Noord-West Veluwe	32%	29%
Rivierenland / Noord-Oost Brabant	27%	28%
Helmond-De Peel / Noord-Limburg	41%	43%
Type of contract		
Permanent contract	56%	55%
Temporary contract	44%	45%
Wage per hour		
≤13 euros per hour	22%	17%
>13 euros per hour	78%	83%
Number of months work before intervention		
0-10 months	21%	24%
11-12 months	79%	76%
Numbers of years in current job		
0-1 year	11%	11%
2-5 years	41%	39%
>5 years	48%	50%
Social welfare benefit 12 months before intervention		
Yes	14%	17%
No	86%	83%

Table 2. Characteristics of employees with a work disability in register data

Characteristics	N=73; %/mean (SD) intervention group register data	N=1526; %/mean (SD) control group register data
Work disability benefit 12 months before intervention		
Yes	95%	94%
No	5%	6%
Sector		
Government	71%	67%
Non-governmental	29%	33%
Type of workplace		
Sheltered workplace	51%	53%
Regular workplace	49%	47%
Company size		
<250 employees	25%	27%
≥250 employees	75%	73%

Characteristics of supervisors guiding employees with a work disability

The study sample of supervisors mostly consisted of males (71%)(Table 3). Most supervisors worked in a governmental organization (29%) and had on average 4.7 (4.9) years of experience with the guidance of employees with a work disability. The majority (67%) guided less than 10 employees with a work disability. See table 3 for more information on the characteristics of supervisors.

Table 3. Characteristics of supervisors

Baseline characteristics supervisors	N=95 %/mean (SD)
Sex	
Male	71%
Female	29%
Mean age	
	44.8(10.8)
Educational level	
Low	26%
Middle	37%
High	35%
Unknown	2%

Table 3. Characteristics of supervisors

Baseline characteristics supervisors	N=95 %/mean (SD)
Number of hours working per week	35.9 (5.9)
Company size	
0-250 employees (SME)	47%
>250 employees	51%
Unknown	2%
Type of organization	
Agriculture and landscaping	15%
Industry and construction	14%
Transport and trade	13%
Service and hospitality	18%
Education	7%
Health care and welfare	4%
Government	29%
Number of years employed at current employer	9.93 (9.8)
Number of years of experience with guidance of employees	4.69 (4.9)
Number of employees guiding at work	
1-10	39%
>10	48%
Unknown	13%
Number of employees with a work disability guiding at work	
1-10	62%
>10	31%
Unknown	7%

Effect of 'Mentorwiji's' on sustainable employment of employees with a work disability (aim 1)

Table 4 shows the intervention effects (i.e. the betas) at the end of the training (T1), and 3 (T2), 6 (T3), 9 (T4) and 12 months (T5) after the end of the training, with effects of other months shown in Supplementary file 1. The beta is the difference in the change of the outcome being employed between the intervention and control group at a certain time point (T), compared to the baseline measurement. In figure 2-5 the same intervention effects are shown for all months for the intervention and control group, for the outcomes being employed (≥ 1 hour/month), for being employed 12 hours per week or more and for being employed for 3 consecutive months (≥ 1 hour/month). The results in table 4 show that the intervention group is more often employed (≥ 1 hour/month) after 3 ($\beta=0.05$; $CI=-0.07-0.16$), 6 ($\beta=0.07$; $CI=-0.04-0.18$), 9 ($\beta=0.08$; $CI=-0.02-0.18$) and 12 ($\beta=0.01$; $CI=-0.08-0.10$) months than the control group, but these differences were not significant. Hence, the betas

show that, although not statistically significant, there is a tendency of a decrease in the number of employees being employed being larger in the control group than in the intervention group. However, differences between the intervention and control group could also be due to sampling variability, as the results in figure 2 show that for being employed (≥ 1 hour/month) only a statistically significant difference was found after 8 months (betas reported in the supplementary file 1). For being employed 12 hours per week the same results were found, which is shown in figure 3. For being employed for 3 consecutive months (≥ 1 hour/month) no significant differences were found at any point in time, which is shown in figure 4. Moreover, figure 2–4 also show that the outcomes on employment were relatively stable in the intervention group and relatively erratic in the control group. For the outcome measure having a temporary contract, the proportion of employees with a temporary contract decreased in the intervention and control group, but no significant differences between groups were found. Regarding the number of hours employees work per week, the results in table 4 show that after 6 months the intervention group works significantly more hours than the control group ($\beta=1.70$; $CI=0.29-3.11$). However, after 12 months these differences attenuated ($\beta=0.11$; $CI=-1.36-1.59$). The results for wage per hour increase in both the intervention and control group, but differences were not significant.

Table 4. Difference-in-Difference analysis outcome measures employees at the end of the training (T1), 3 (T2), 6 (T3), 9 (T4) and 12 months (T5) after the end of the training

Primary and secondary outcome measures employees	N intervention	N control	Mean (SD)/% intervention	Mean (SD)/% control	β	95%-CI	P-value
Employed ≥ 1 hours/month							
T1	73	1526	100%	100%			
T2	73	1526	97%	96%	0.05	-0.07 to 0.16	0.437
T3	73	1526	97%	94%	0.07	-0.04 to 0.18	0.202
T4	73	1526	97%	93%	0.08	-0.02 to 0.18	0.130
T5	73	1526	96%	95%	0.01	-0.08 to 0.10	0.834

Table 4. Difference-in-Difference analysis outcome measures employees at the end of the training (T1), 3(T2), 6(T3), 9(T4) and 12 months(T5)after the end of the training

Primary and secondary outcome measures employees	N intervention	N control	Mean (SD)/% intervention	Mean (SD)/% control	β	95%-CI	P-value
Employed ≥ 12 hours/ week							
T1	73	1526	96%	95%			
T2	73	1526	95%	91%	0.08	-0.03 to 0.19	0.154
T3	73	1526	95%	87%	0.09	-0.03 to 0.19	0.119
T4	73	1526	95%	87%	0.07	-0.04 to 0.17	0.203
T5	73	1526	96%	89%	0.04	-0.07 to 0.14	0.470
Employed for 3 consecutive months (≥ 1 hours/ month)							
T1	73	1526	90%	95%			
T2	73	1526	96%	96%	0.02	-0.10 to 0.14	0.750
T3	73	1526	96%	92%	0.07	-0.06 to 0.20	0.311
T4	73	1526	97%	88%	0.10	-0.02 to 0.22	0.106
T5	73	1526	96%	93%	0.02	-0.09 to 0.13	0.726
Temporary contract							
T1	73	1526	37%	41%			
T2	71	1467	34%	39%	-0.01	-0.17 to 0.14	0.847
T3	71	1437	35%	31%	0.07	-0.10 to 0.24	0.411
T4	71	1424	32%	26%	0.13	-0.03 to 0.30	0.119
T5	70	1437	27%	24%	0.01	-0.14 to 0.16	0.915
Number of hours working per week							
T1	73	1526	30.19(8.5)	28.97(9.6)			
T2	71	1467	30.11(8.5)	28.86(9.5)	0.47	-1.00 to 1.95	0.529
T3	71	1437	30.70(8.0)	28.65(10.0)	1.70	0.29 to 3.11	0.018
T4	71	1424	30.72(8.0)	29.05(9.6)	0.70	-0.49 to 1.90	0.249
T5	70	1437	31.82(6.9)	29.19(9.7)	0.11	-1.36 to 1.59	0.881

Table 4. Difference-in-Difference analysis outcome measures employees at the end of the training (T1), 3 (T2), 6 (T3), 9 (T4) and 12 months (T5) after the end of the training

Primary and secondary outcome measures employees	N intervention	N control	Mean (SD)/% intervention	Mean (SD)/% control	β	95%-CI	P-value
Wage per hour							
T1	73	1526	11.30 (1.4)	12.06 (3.6)			
T2	71	1467	11.35 (1.4)	12.14 (3.4)	-0.03	-0.19 to 0.12	0.662
T3	71	1437	11.44 (1.4)	12.18 (3.5)	-0.09	-0.25 to 0.06	0.220
T4	71	1424	11.59 (1.4)	12.09 (3.2)	0.14	-0.08 to 0.35	0.211
T5	70	1437	11.68 (1.7)	12.19 (3.4)	0.24	-0.01 to 0.50	0.064

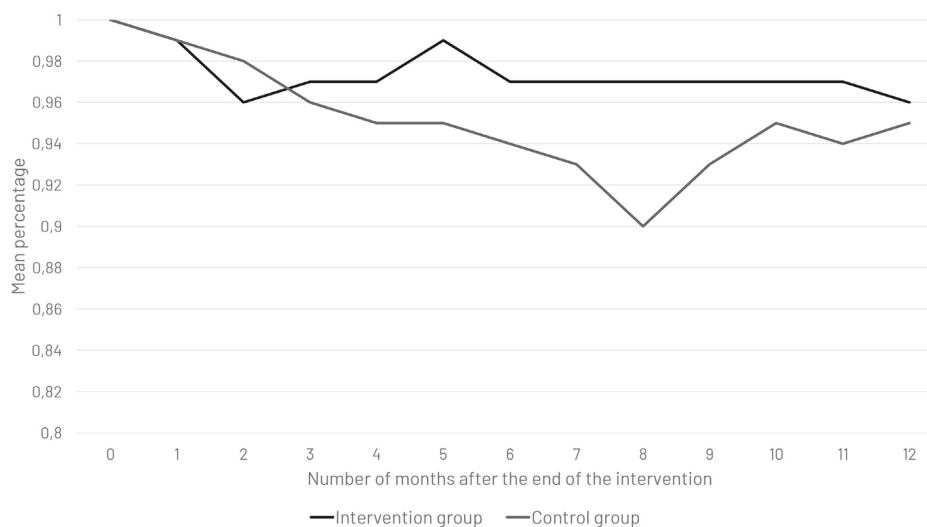


Figure 2. Employed ≥1 hour per month

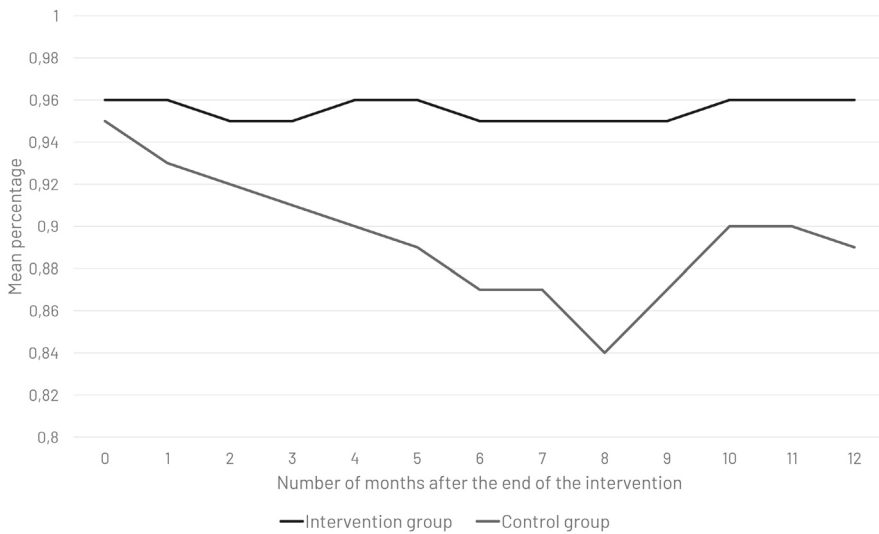


Figure 3. Employed ≥ 12 hours per week

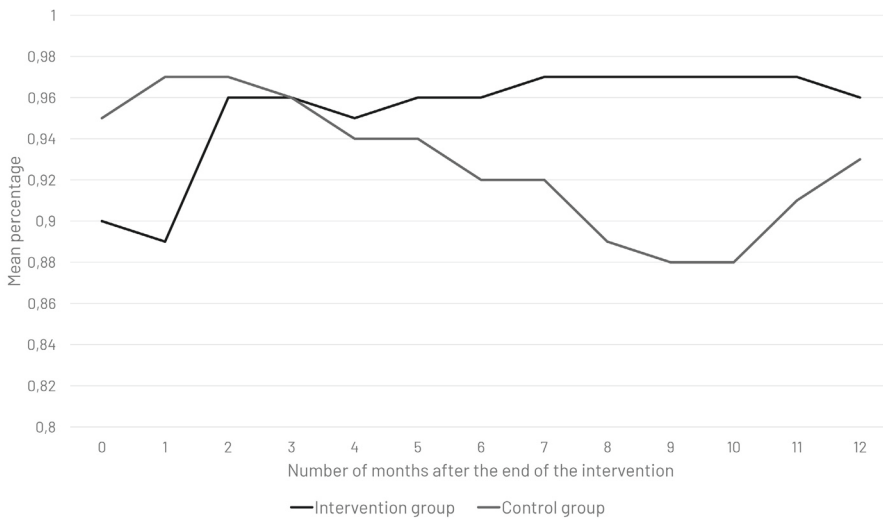


Figure 4. Employed for 3 consecutive months (≥ 1 hour/month)

Characteristics affecting the effectiveness of 'Mentorwijijs' (aim 2)

The results show that the effect of 'Mentorwijijs' tended to be stronger among employees with a temporary contract and with a social welfare benefit 12 months before the end of the intervention, as opposed to employees without a temporary contract and a social welfare benefit (Supplementary file 2). The betas in supplementary file 2 are presented for one subgroup. For instance, the results in supplementary file 2 show that the betas for employees that had a social welfare benefit (i.e. within one subgroup) were positive after 3 ($\beta=0.28$), 6 ($\beta=0.29$), 9 ($\beta=0.27$), and 12 ($\beta=0.27$) months. This means that the effect of the training in the intervention group is stronger among employees that had a social welfare benefit, and that the effect of the training is weaker among employees without a social welfare benefit. Moreover, the effect of 'Mentorwijijs' also tended to be stronger among employees that have a supervisor that guides less than 10 employees with a work disability. Conversely, the results show that the effect of 'Mentorwijijs' tended to be weaker among employees in the governmental sector, working in an organization with more than 250 employees, working in sheltered workplaces and with a work disability benefit 12 months before the end of the intervention.

Effect of 'Mentorwijijs' on supervisor guidance of employees with a work disability (aim 3)

Table 5 shows that knowledge and self-efficacy for attitudes and skills of supervisors significantly improved between T0, and all follow-up moments after the training. Improvements were mainly between T0 and T1, and then remained stable over time. For intention to adopt attitudes significant effects were also found between T0 and all follow-up moments. However, for intention to adopt and applied attitudes and skills no significant effects were found.

Table 5. Linear regression showing the effect of all outcome measures at the supervisor level before (T0), directly after (T1) and 3 (T2) and 6 months (T3) after the end of the training

Outcome	N	Mean (SD)	Model 1: Unadjusted			Model 2: Adjusted model		
			β	95%-CI	P-value	β	95%-CI	P-value
Knowledge								
T0 (reference category)	127	3.35 (0.79)						
T1	95	4.14 (0.63)	0.77	0.62 to 0.92	0.000	0.77*	0.62 to 0.92*	0.000*
T2	91	4.22 (0.64)	0.87	0.72 to 1.03	0.000	0.87*	0.72 to 1.03*	0.000*
T3	87	4.23 (0.62)	0.89	0.74 to 1.05	0.000	0.89*	0.74 to 1.05*	0.000*
Self-efficacy								
Attitude								
T0 (reference category)	127	4.23 (0.64)						
T1	95	4.52 (0.54)	0.29	0.15 to 0.43	0.000	0.29*	0.15 to 0.43*	0.000*
T2	91	4.56 (0.58)	0.32	0.18 to 0.47	0.000	0.32*	0.18 to 0.47*	0.000*
T3	87	4.59 (0.54)	0.36	0.22 to 0.51	0.000	0.36*	0.22 to 0.51*	0.000*
Skills								
T0 (reference category)	127	3.84 (0.68)						
T1	95	4.33 (0.53)	0.49	0.34 to 0.63	0.000	0.49*	0.34 to 0.63*	0.000*
T2	91	4.32 (0.61)	0.48	0.36 to 0.63	0.000	0.48*	0.36 to 0.63*	0.000*
T3	87	4.32 (0.66)	0.49	0.34 to 0.64	0.000	0.49*	0.34 to 0.64*	0.000*

Table 5. Linear regression showing the effect of all outcome measures at the supervisor level before (T0), directly after (T1) and 3 (T2) and 6 months (T3) after the end of the training

Outcome	Model 1: Unadjusted				Model 2: Adjusted model			
	N	Mean (SD)	β	95%-CI	P-value	β	95%-CI	P-value
Intention to adopt behavior								
Attitude								
T0(reference category)	127	4.60 (0.42)						
T1	95	4.75 (0.35)	0.14	0.06 to 0.22	0.001	0.14**	0.05 to 0.23**	0.003**
T2	91	4.71 (0.43)	0.19	0.02 to 0.18	0.016	0.10**	0.01 to 0.20**	0.028**
T3	87	4.66 (0.49)	0.07	-0.02 to 0.15	0.111	0.09**	0.00 to 0.18**	0.049**
Skills								
T0(reference category)	127	4.26 (0.61)						
T1	95	4.29 (0.64)	0.03	-0.08 to 0.14	0.615	0.06***	-0.08 to 0.20***	0.382***
T2	91	4.28 (0.59)	0.02	-0.09 to 0.13	0.708	0.03***	-0.11 to 0.17***	0.669***
T3	87	4.28 (0.64)	0.04	-0.07 to 0.15	0.465	0.03***	-0.11 to 0.16***	0.683***

Table 5. Linear regression showing the effect of all outcome measures at the supervisor level before (T0), directly after (T1) and 3 (T2) and 6 months (T3) after the end of the training

Outcome	Model 1: Unadjusted				Model 2: Adjusted model				
	N	Mean (SD)	β	P-value	95%-CI	β	P-value	95%-CI	P-value
Apply behaviors									
Attitude									
T0(reference category)	121	3.64(0.71)							
T1	93	3.77(0.75)	0.08	0.277	-0.07 to 0.24	0.04****	0.638****	-0.14 to 0.22*****	0.638****
T2	86	3.75(0.84)	0.09	0.253	-0.07 to 0.25	-0.04****	0.645****	-0.23 to 0.14*****	0.645****
T3	83	3.88(0.82)	0.24	0.004	0.08 to 0.40	0.17****	0.067****	-0.01 to 0.35*****	0.067****
Skills									
T0(reference category)	117								
T1	91	4.44(0.58)	0.08	0.264	-0.06 to 0.22	0.03****	0.769****	-0.15 to 0.20*****	0.769****
T2	86	4.30(0.72)	-0.05	0.507	-0.19 to 0.10	-0.09****	0.293****	-0.27 to 0.08*****	0.293****
T3	83	4.36(0.72)	0.017	0.817	-0.13 to 0.16	-0.01****	0.890****	-0.19 to 0.16*****	0.890****

*no confounders changed the beta of the independent variable with more than 10%; **adjusted for number of years of experience; ***adjusted for number of years of experience, number of years employed at current employer, educational level, number of employees guiding at the workplace, number of employees with a work disability guiding at the workplace; **** adjusted for number of years of experience, number of years employed at current employer, educational level, number of employees they guide at the workplace, number of employees with a work disability they guide at the workplace, company size

Implementation process of 'Mentorwijs' (aim 4)

In this study a total of 19 'Mentorwijs' trainings that each consisted of five meetings were evaluated. The intervention was delivered to groups, ranging from 5-18 supervisors in one training. The majority of the trainings (n=14) took place at municipal organizations or at the workplaces of supervisors (Table 6). Five trainings took place online due to the Covid-19 Pandemic. Most supervisors (73%) participated in all 5 meetings of a single training and the training was on average evaluated as satisfying (mean satisfaction score ranging from 4.4 to 4.7 (on a scale from 1-5). Between 25 and 31% of the supervisors indicated they spend on average 4-7 hours extra time on the guidance of employees with a work disability after completion of the training. The majority of supervisors rated almost all contextual factors a high score. The supervisors rated feedback and formal endorsement from their own organization lower, as compared to other contextual factors.

Table 6. Process evaluation measures

Process evaluation outcomes		Mean (SD)/%
Dose delivered	Training at municipal organization or at workplace	74%
	Online training	26%
Dose received	Participated in 5 meetings of a training	73%
	Participated in 4 meetings of a training	18%
	Participated in 3 meetings of a training	7%
	Participated in 2 meetings of a training	0%
	Participated in 1 meeting	1%
Extra time spent on guidance	Guidance of employees takes more time (yes)	T1 = 25% T2 = 31% T3 = 26%
	Number of hours per week spent extra on guidance	T1 = 6.6 (8.3) T2 = 5.5 (4.8) T3 = 4.7 (3.9)
Satisfaction	Satisfaction in general	4.4 (0.6)
	Satisfaction meetings	4.4 (0.5)
	Satisfaction trainer(s)	4.7 (0.9)
	Satisfaction content of the training	4.4 (0.9)
	Satisfaction teaching methods of the training	4.4 (0.9)
	Satisfaction structure and duration of the training	4.4 (0.9)

Table 6. Process evaluation measures

Process evaluation outcomes		Mean (SD)/%
Contextual factors on supervisor and organizational level	Outcome expectation: I expect 'Mentorwijijs' to succeed in improving the employability of employees with a work disability	4.4 (0.8)
	Task perception: I consider it part of my job to apply what I have learned in the training to the guidance of employees	4.6 (0.7)
	Satisfaction employees: Employees are in general satisfied if I use what I have learned in the training	4.2 (0.9)
	Self-efficacy expectation: I am able to use what I have learned in the training in the guidance of employees	4.1 (0.6) ***
	Sufficient staff: There is sufficient staff in our organization to apply what I have learned in the training	4.1 (1.0)
	Financial resources: I receive sufficient financial resources from our organization to apply what I have learned in the training	4.2 (1.0)
	Time: I get enough time from our organization to apply what I learned in the training	4.4 (0.8)
	Feedback: In my organization there is regular discussion with employers about what I have learned in the training and how it can improve the guidance of employees and how to implement this in the guidance	3.3 (1.2)
	Formal endorsement: Formal agreements in the organizational policies have been made by the management and/or employer about guiding employees corresponding to what supervisors have learned in the training	Yes = 31% No = 28% I don't know = 41%

*Scale 1-5; 1=very unsatisfied, 5=very satisfied; **Scale 1-5; 1=totally disagree, 5=totally agree;

***Scale 1-5; 1=most definitely not, 5=most definitely yes

Discussion

On employee level, 'Mentorwijijs' significantly improved outcomes on employment after 8 months. 'Mentorwijijs' tended to have a positive effect on the sustainable employability of employees with a work disability, as can be obtained from figure

2-4. In these figures, the 'Mentorwijis' group outcomes on employment showed a relatively stable tendency over time, as compared to the control group, and thereby prevented early drop-out from work. However, only significant differences between intervention and control group were found 8 months after the end of the training. Employees for whom the training tended to be more effective were employed with a temporary contract, had a social welfare benefit, and a supervisor that guides less than 10 employees with a work disability. In contrast, employees for whom the training tended to be less effective were employed in the governmental sector, sheltered workplaces, larger organizations and had a work disability benefit. On supervisor level 'Mentorwijis' significantly improved knowledge and self-efficacy, but no effects were found on intention to adopt and applied behaviors. The process evaluation showed that supervisors were generally satisfied about the training, and most contextual factors that may affect implementation of 'Mentorwijis' scored relatively high.

Interpretation of findings regarding effects 'Mentorwijis' on outcomes sustainable employment (aim 1)

In this study we found small effects of 'Mentorwijis' on sustainable employment. Significant effects for outcomes on employment were found after 8 months, but attenuated after 12 months. This is in line with another study that also found positive effects of a supervisor training on the short-term among employees (13). Still, effects in this study are small and attenuate after 8 months, which could be explained by factors that lay outside the scope of 'Mentorwijis' and could not be adjusted for in this study. For instance, the type of contract could affect the extent to which supervisors apply the training to employees. Supervisors are more often inclined to invest in an employee with a permanent contract and facilitate workplace adjustments or offer training opportunities, as opposed to employees with a temporary contract (20). This is, however, in contrast to our findings that the 'Mentorwijis' training was most effective among employees with a temporary contract. An explanation for this could be that more proximal factors within workplaces have a greater impact on sustainable employability than the guidance of supervisors. For example, temporary contracts for employees with a work disability are often not converted into a permanent contract (20). Moreover, at 12 months follow-up there is a high probability that one-year temporary contracts have ended. This may explain the lack of differences between the intervention and control group after 12 months, as a training for supervisors most likely does not have a large influence on changing temporary contracts into permanent contracts. Furthermore, workplaces that are characterized by a very high level of job insecurity may result in feelings of anxiety and financial stress among employees (20). Hence, having a supervisor who is more supportive may not be sufficient to improve employees' sustainable employability. This is underlined by research showing that factors such as an open and safe organizational climate

also play a role in the sustainable employability of employees with a work disability (21).

Interpretation of findings regarding characteristics affecting the effectiveness of 'Mentorwijijs' (aim 2)

This study also showed that certain characteristics enhanced or decreased the effect of 'Mentorwijijs' on sustainable employment. The training tended to be less effective among employees in larger organizations, possibly due to less attention for each individual employee in these types of organizations. In addition, there may also work other disadvantaged employees, such as older employees, that need additional support to remain employed (22). In contrast, literature also shows that the employment of employees with a work disability is higher in larger organizations, as supervisors have more flexibility to support employees with a disability (23). This could result in an improved job performance and employability, as supervisors can provide more appropriate accommodations (24). The finding that the training tended to be less effective in larger organizations, is in line with our finding that the effect of the training tended to be more effective among employees that have a supervisor that guides less than 10 employees with a work disability. These employees might receive more personal attention and/or support from their supervisor. The training also tended to be less effective among employees that worked in the governmental sector or sheltered workplaces. This is striking, because the governmental sector has the highest share of organizations that employ people with a disability (25), and sheltered workplaces are especially created for employees with a work disability that are not able to work in the regular labor market. The effect of 'Mentorwijijs' might be less effective, as in these types of workplaces more employees with severe disabilities could be employed which have a higher chance of dropping out of the labor market. Thereby, a supervisor training might not be sufficient to enhance the sustainable employability of employees with a work disability. The latter may also account for employees that had a work disability benefit, for whom the effect of the supervisor training also tended to be weaker. In contrast, the training tended to be more effective for employees that had a social welfare benefit. This group of employees could be less vulnerable and are often temporarily unemployed, as opposed to those with a work disability benefit, meaning there is higher chance that employees with a social welfare benefit improve their sustainable employability.

Interpretation of findings regarding effect 'Mentorwijijs' on behavioral outcomes supervisor (aim 3)

This study found that 'Mentorwijijs' had positive effects on supervisor knowledge and self-efficacy. A systematic review and meta-analyses on training managers to support and understand the mental health of employees found similar results (26). Although, just like in our study, this review highlighted that no information

is available on the long-term effects of such trainings among supervisors. Furthermore, our training did not render any effects on intention to adopt and applied behaviors. The training is relatively short (i.e. 5 meetings over 5 weeks) which could be insufficient to change these behavioral outcomes. Moreover, some trainings took place online which could hamper the effectiveness of the training, as it may be more difficult for the trainers to notice non-verbal signals or to adequately respond to the needs of supervisors. A lack of effect on intention to adopt and applied behaviors may also be because changes in behaviors for the guidance of employees with a work disability are difficult to measure. We based the items of the questionnaire on the theoretical handbook of 'Mentorwijz' (2). However, the training also leaves plenty of room to respond to the needs of supervisors and to share experiences from practice. The latter were not measured in our questionnaire. Furthermore, supervisors already scored relatively high on (intention to) behaviors at baseline, and therefore placing a limitation on the potential improvement of these outcome measures. Alternatively, supervisors self-reported behaviors may reflect social desirability, resulting in more favorable reporting in the intention to adopt or applied behaviors.

Interpretation of findings regarding implementation process of 'Mentorwijz' (aim 4)

Next to the methodological explanations described above, the extent to which supervisors can implement the training largely depends on contextual factors. The path from a training being perceived as helpful by a supervisor, to the ability and opportunity to implement their newly acquired knowledge, attitudes, and skills in daily work settings, to employees noticing these changes, and also to measure changes among supervisors and employees is rather complex and difficult to intervene upon (27). Contextual factors (such as support from managers, sufficient time and resources and organization's climate and culture) may form barriers or facilitators along this pathway and also may have played a role in the lack of significant effects on employment outcome among employees. Researchers have argued that the organizational conditions or work environment are highly important to understand effects of a training in organizations (28, 29). During the intervention and evaluation period organizational changes may have occurred that could impact the transfer of the supervisor training at the workplace. This type of information, such as the impact of the measures for covid-19, was not captured, and therefore remains uncertain. By using an intervention and matched control group for the effect evaluation among employees we could not match, or sufficiently control for, organizational changes in our statistical analyses. Such changes, and other relevant confounding factors may play a role in the implementation of 'Mentorwijz' and should therefore be considered in future research. Furthermore, the extent to which the implementation of a training is embedded in organizational policies is also important. Organizational

policies regarding employment of employees with a work disability facilitates the sustainable employment of these employees (23, 30). These types of policies may provide supervisors more time and resources for the guidance of employees with a work disability. The process evaluation in this study showed that about one third of the supervisors spend on average 4-7 hours more time on the guidance of employees with a disability after completion of the training. The extent to which companies provide supervisors extra time to spend on the guidance could play a role in the exact number of hours supervisors can spend on doing this. The process evaluation also showed that supervisors scored less positive on two factors, namely feedback and formal endorsement. These factors, which are not part of 'Mentorwijis', could hamper the implementation of 'Mentorwijis' in practice, and may explain the lack of effects on intention to adopt or applied behaviors.

Strengths & limitations

To our knowledge this is the first study that evaluates the effectiveness of a supervisor training to improve the guidance of employees with a work disability on the level of supervisors and employees, with a long-term follow-up period among employees. However, this study also contained several methodological limitations. First, the selection of employees with work disabilities was done by supervisors and might have resulted in selection bias. Supervisors may have selected a "better" employee to participate in this study. This might have biased the effects of 'Mentorwijis', in which the training may be less effective than our results suggest. Second, a small sample size of employees could also have biased the results and may have contributed to only finding significant effects at 8 months. Third, the control group of employees with a work disability was identified in other regions than the intervention group, and the allocation to the intervention group was not randomized. To address this limitation, we used a propensity score matching method to achieve optimal comparability between the groups in terms of primary outcomes measures and additional matching criteria (31). This allowed to control for major confounding variables, such as age, gender, and employment characteristics. Although, this does not exclude that unobserved or unmeasurable factors, such as type of work disability, organizational culture, and HR-policies, might have influenced our results and may have reduced the comparability between the intervention and control group. Fourth, selection bias might also have occurred in the group of supervisors that were followed over time. Supervisors already scored relatively high on certain behavioral outcomes. This may reflect that supervisors, who participated in this study, already had a more positive attitude towards the guidance of employees with a work disability, and therefore placing a limitation on the potential improvement of these measures. Another limitation is that the evaluation among supervisors did not contain a control group, which cannot totally exclude that intervention effects were caused by elements other than the training itself. Moreover, recall bias may also have

occurred as supervisors were asked to complete the questionnaire four times within a short period of times between measurements, meaning that supervisors may have remembered the questions in the questionnaire and could fill in the same answers. Although, this does not account for the effect evaluation among employees by using register data.

Implications for research and practice

This study showed that the effects of a supervisor training on employee and supervisor level are mixed and difficult to capture. Taking into account the methodological limitations of this study, there is a need for a higher quality study design to examine the effectiveness of 'Mentorwijijs'. A larger sample size and randomization of employees and supervisors could avoid the main limitations of this study – i.e. selection bias and the influence of unobserved or unmeasurable factors. Furthermore, qualitative research is needed to gain more insight into the experiences of supervisors with the training itself, but also what kind of elements (i.e. content and/or teaching methods) of the training were relevant for supervisors to implement at the workplace. Moreover, more research is also needed on organizational factors (e.g. feedback and formal endorsement) that enable supervisors to implement the training. For instance, research should be conducted on how organizational factors influence the guidance of employees with a work disability and how employers could be persuaded to implement factors that positively enhance the guidance, such as support from management and sufficient time and resources.

Training supervisors in the guidance of employees with a work disability is highly recommended, as the importance of their role in the organization is widely recognized (10, 21). However, this study only found significant effects on knowledge and self-efficacy among supervisors, while effects on sustainable employment were only significant at 8 months and thereafter attenuated and became non-significant. As described above, the training was relatively short, thus to sustain effects we may need to think about a follow-up of the training or (monthly) return meetings. In these meetings supervisors can for example exchange experiences about the implementation of the training or further discuss certain aspects of the training. As was also described above, the effectiveness of the training is highly dependent on contextual factors. When employers do not make informed decisions on how these kinds of interventions can be effectively implemented in organizations, possibly in combination with or as an addition to other interventions, the effects remain uncertain. Trainings, such as 'Mentorwijijs' need to be integrated in organizational policies to reassure that supervisors have sufficient time and resources to implement their newly acquired knowledge, attitudes, and skills. Considering the role of contextual factors (e.g. support from managers or resources) it would be useful to, in addition to 'Mentorwijijs',

also provide a training taking such organizational factors into account. Moreover, every organization may have other needs regarding the training of supervisors to improve the guidance of employees with a work disability. Therefore, effectiveness of trainings, such as 'Mentorwijijs' could be improved by addressing the needs of an organization before the start of the training or adapting the training in consultation with employers. Lastly, HR or management of organizations should, next to offering trainings to supervisors, structurally strive for measures that improve the inclusion of employees with a disability, as this may also result in more employment opportunities and human resources practices for employability (32). This is important, as solely implementing a supervisor training may not be enough to improve sustainable employment of employees.

Conclusion

'Mentorwijijs' is a promising training to improve the guidance of employees with a work disability. Small positive effects were found on the sustainable employability of employees, but effects attenuated in the long-term. Among supervisors the training mainly improved knowledge and self-efficacy. Further research is needed to examine whether these promising findings of 'Mentorwijijs' can be replicated in studies with a larger sample size and reduced chance on selection bias. A follow-up of the training may be needed to also improve intention to adopt and applied attitudes and skills of supervisors and thereby the sustainable employability of employees on the longer term. Further research is also needed to examine how this intervention could be successfully implemented to increase the effectiveness for supervisors and employees, taking contextual factors into account.

References

1. Berendsen E, Van Deursen C, Dumhs L, Stoutjesdijk M. UWV Monitor Arbeidsparticipatie Arbeidsbeperkten 2020. Amsterdam: UWV; 2020.
2. Hazelzet AM, van de Ven HA, de Wolff MS, Eversen F, van der Wal J, Andriessen S. Handboek Mentorwijs. Een training voor leidinggevenden van kwetsbare medewerkers. Leiden: TNO; 2017.
3. CBS Statline. Arbeidsdeelname; arbeidsgehandicapten 2015-2017. 2018 [Available from: <https://opendata.cbs.nl/#/CBS/nl/dataset/83322NED/table>].
4. Van der Klink JJ, Bültmann U, Burdorf A, Schaufeli WB, Zijlstra FR, Abma FI, et al. Sustainable employability - definition, conceptualization, and implications: A perspective based on the capability approach. *Scandinavian Journal of Work, Environment & Health*. 2016;42(1):71-9.
5. Williams AE, Fossey E, Corbière M, Paluch T, Harvey C. Work participation for people with severe mental illnesses: An integrative review of factors impacting job tenure. *Australian Occupational Therapy Journal*. 2016;63(2):65-85.
6. Corbière M, Villotti P, Lecomte T, Bond GR, Lesage A, Goldner EM. Work accommodations and natural supports for maintaining employment. *Psychiatric Rehabilitation Journal*. 2014;37(2):90-8.
7. Villotti P, Corbière M, Fossey E, Fraccaroli F, Lecomte T, Harvey C. Work Accommodations and Natural Supports for Employees with Severe Mental Illness in Social Businesses: An International Comparison. *Community Mental Health Journal*. 2017;53(7):864-70.
8. Luu TT. The well-being among hospitality employees with disabilities: The role of disability inclusive benevolent leadership. *International Journal of Hospitality Management*. 2019;80(3):25-35.
9. Vooijs M, Putnik K, Hermans L, Fermin B, Hazelzet AM, van Genabeek JA. Duurzame plaatsing in werk van werknemers met een arbeidsbeperking. Leiden: TNO; 2019.
10. Efimov I, Lengen JC, Kordsmeyer AC, Harth V, Mache S. Capturing and analysing the working conditions of employees with disabilities in German social firms using focus groups. *BMC Public Health*. 2022;22:413.
11. Skakon J, Nielsen K, Borg V, Guzman J. Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research. *Work & Stress*. 2010;24(2):107-39.
12. Schreuder JA, Groothoff JW, Jongsma D, van Zweeden NF, van der Klink JJ, Roelen CA. Leadership Effectiveness: A Supervisor's Approach to Manage Return to Work. *Journal of Occupational Rehabilitation*. 2013;23(3):428-37.
13. Milligan-Saville JS, Tan L, Gayed A, Barnes C, Madan I, Dobson M, et al. Workplace mental health training for managers and its effect on sick leave in employees: a cluster randomised controlled trial. *Lancet Psychiatry*. 2017;4(11):850-8.
14. Landelijk Trial Register. Training for supervisors to improve sustainable employment of vulnerable employees - an effectiveness study. Identifier Trial NL7901 2019 [Available from: <https://www.trialregister.nl/trial/7901>].
15. Des Jarlais DC, Lyles C, Crepaz N, Group T. Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement. *American Journal of Public Health*. 2004;94(3):361-6.
16. Ilmarinen J. The work ability index (WAI). *Occupational Medicine*. 2007;57(2):160.

17. Fleuren MA, Paulussen TG, van Dommelen P, van Buuren S. Towards a measurement instrument for determinants of innovations. *International Journal for Quality in Health Care*. 2014;26(5):501-10.
18. De Graaf-Zijl M, Spijkerman M, Zwinkels W. Long-Term Effects of Individual Placement and Support Services for Disability Benefits Recipients with Severe Mental Illnesses. *IZA Discussion Paper*. 2010;No. 13772.
19. Zorn CJ. Generalized Estimating Equation Models for Correlated Data: A Review with Applications. *American Journal of Political Science*. 2001;45(2):470-90.
20. Smit A, Oden P. Werken met een beperking: nog een wereld te winnen: ervaringen en behoeften van mensen met een arbeidsbeperking op de arbeidsmarkt. *Sociaal bestek*. 2018;80(1):58-60.
21. Van Hees SG, Carlier BE, Vossen E, Blonk RW, Oomens S. Towards a better understanding of work participation among employees with common mental health problems: a systematic realist review. *Scandinavian Journal of Work, Environment & Health*. 2022;48(3):173-89.
22. Mulders H, van Ruitenbeek G, Wagener B, Zijlstra F. Toward More Inclusive Work Organizations by Redesigning Work. *Frontiers in Rehabilitation Sciences*. 2022;3:861561.
23. Van Ooijen R, Koning PW, Boot CR, Brouwer S. The contribution of employer characteristics to continued employment of employees with residual work capacity: evidence from register data in The Netherlands. *Scandinavian Journal of Work, Environment & Health*. 2021;47(6):435-45.
24. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. *Journal of Business and Psychology*. 2020;35(2):135-58.
25. Van Echtelt P, Putman L, de Voogd-Hamelink M. Inclusieve arbeidsmarkt en duurzame inzetbaarheid. *Arbeidsmarkt in kaart: Werkgevers-editie 2. Sociaal en Cultureel Planbureau (SCP)*; 2019.
26. Gayed A, Milligan-Saville JS, Nicholas J, Bryan BT, LaMontagne AD, Milner A, et al. Effectiveness of training workplace managers to understand and support the mental health needs of employees: a systematic review and meta-analysis. *Occupational and Environmental Medicine*. 2018;75(6):462-70.
27. Kuehnl A, Seubert C, Rehfuess E, von Elm E, Nowak D, Glaser J. Human resource management training of supervisors for improving health and well-being of employees. *Cochrane Database of Systematic Reviews*. 2019;9(9):Cd010905.
28. Biron C, Karanika-Murray M. Process evaluation for organizational stress and well-being interventions: Implications for theory, method, and practice. *International Journal of Stress Management*. 2014;21(1):85-111.
29. Bell BS, Tannenbaum SI, Ford JK, Noe RA, Kraiger K. 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology*. 2017;102(3):305-23.
30. Hazelzet AM, Putnik K, Otten W, Goudswaard A, Blonk RW. Inclusief werkgeversgedrag: een onderzoek naar factoren die samenhangen met het in dienst hebben (genomen) van mensen met een afstand tot de arbeidsmarkt. Leiden: TNO; 2017.
31. Austin PC. An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate Behavioral Research*. 2011;46(3):399-424.

32. Hulsegge G, Otten W, van de Ven HA, Hazelzet AM, Blonk RW. Employers' attitude, intention, skills and barriers in relation to employment of vulnerable workers. *Work*. 2022;72(4):1215-26.

Supplementary files

Supplementary file 1. Difference-in-Difference analysis outcome measures employees 1-12 months after the end of the training

Primary and secondary outcome measures employees	β	95%-CI	P-value
Employed ≥ 1 hours/month			
1 month after the training	0.02	-0.04 to 0.08	0.533
2 months after the training	0.02	-0.09 to 0.13	0.714
3 months after the training (T2)	0.05	-0.07 to 0.16	0.437
4 months after the training	0.06	-0.06 to 0.17	0.348
5 months after the training	0.08	-0.03 to 0.19	0.154
6 months after the training (T3)	0.07	-0.04 to 0.18	0.202
7 months after the training	0.08	-0.03 to 0.19	0.160
8 months after the training	0.11	0.01 to 0.21	0.027
9 months after the training (T4)	0.08	-0.02 to 0.18	0.130
10 months after the training	0.05	-0.05 to 0.16	0.330
11 months after the training	0.02	-0.08 to 0.13	0.633
12 months after the training (T5)	0.01	-0.08 to 0.10	0.834
Employed ≥ 12 hours/week			
1 month after the training	0.04	-0.03 to 0.10	0.311
2 months after the training	0.08	-0.04 to 0.19	0.187
3 months after the training (T2)	0.08	-0.03 to 0.20	0.154
4 months after the training	0.11	-0.01 to 0.24	0.067
5 months after the training	0.08	-0.03 to 0.19	0.148
6 months after the training (T3)	0.09	-0.02 to 0.20	0.119
7 months after the training	0.09	-0.02 to 0.21	0.124
8 months after the training	0.10	0.00 to 0.21	0.047
9 months after the training (T4)	0.07	-0.04 to 0.17	0.203
10 months after the training	0.05	-0.06 to 0.16	0.327
11 months after the training	0.04	-0.06 to 0.14	0.452
12 months after the training (T5)	0.04	-0.07 to 0.14	0.470

Primary and secondary outcome measures employees	β	95%-CI	P-value
Employed for 3 consecutive months (≥ 1 hours/month)			
1 month after the training	-0.03	-0.09 to 0.02	0.263
2 months after the training	-0.00	-0.13 to 0.12	0.985
3 months after the training (T2)	0.02	-0.10 to 0.14	0.750
4 months after the training	0.04	-0.09 to 0.17	0.536
5 months after the training	0.05	-0.08 to 0.18	0.426
6 months after the training (T3)	0.07	-0.06 to 0.20	0.311
7 months after the training	0.10	-0.03 to 0.24	0.138
8 months after the training	0.10	-0.02 to 0.22	0.118
9 months after the training (T4)	0.10	-0.02 to 0.22	0.106
10 months after the training	0.11	-0.02 to 0.23	0.093
11 months after the training	0.04	-0.07 to 0.16	0.455
12 months after the training (T5)	0.02	-0.09 to 0.13	0.726
Temporary contract			
1 month after the training	0.03	-0.01 to 0.08	0.155
2 months after the training	-0.03	-0.18 to 0.12	0.714
3 months after the training (T2)	-0.01	-0.17 to 0.14	0.847
4 months after the training	0.01	-0.16 to 0.17	0.945
5 months after the training	0.07	-0.09 to 0.24	0.380
6 months after the training (T3)	0.07	-0.10 to 0.24	0.411
7 months after the training	0.09	-0.09 to 0.26	0.348
8 months after the training	0.12	-0.05 to 0.29	0.163
9 months after the training (T4)	0.13	-0.03 to 0.30	0.119
10 months after the training	0.12	-0.06 to 0.30	0.183
11 months after the training	0.03	-0.12 to 0.18	0.733
12 months after the training (T5)	0.01	-0.14 to 0.16	0.915
Number of hours working per week			
1 month after the training	0.66	-0.44 to 1.76	0.241
2 months after the training	0.86	-0.36 to 2.08	0.168
3 months after the training (T2)	0.47	-1.00 to 1.95	0.529
4 months after the training	1.29	-0.04 to 2.62	0.058
5 months after the training	1.55	0.07 to 3.03	0.041
6 months after the training (T3)	1.70	0.29 to 3.11	0.018
7 months after the training	1.73	0.22 to 3.24	0.025
8 months after the training	0.36	-0.86 to 1.58	0.562
9 months after the training (T4)	0.70	-0.49 to 1.90	0.249
10 months after the training	0.55	-0.83 to 1.93	0.433
11 months after the training	-0.05	-1.48 to 1.38	0.941
12 months after the training (T5)	0.11	-1.36 to 1.59	0.881

Primary and secondary outcome measures employees	β	95%-CI	P-value
Wage per hour			
1 month after the training	-0.11	-0.23 to 0.01	0.075
2 months after the training	0.03	-0.11 to 0.17	0.658
3 months after the training (T2)	-0.03	-0.19 to 0.12	0.662
4 months after the training	-0.03	-0.16 to 0.09	0.606
5 months after the training	0.04	-0.12 to 0.21	0.599
6 months after the training (T3)	-0.09	-0.25 to 0.06	0.220
7 months after the training	0.01	-0.17 to 0.19	0.917
8 months after the training	0.16	-0.01 to 0.34	0.072
9 months after the training (T4)	0.14	-0.08 to 0.35	0.211
10 months after the training	0.20	-0.01 to 0.42	0.066
11 months after the training	0.24	0.01 to 0.48	0.044
12 months after the training (T5)	0.24	-0.01 to 0.50	0.064

Supplementary file 2. Difference-in-Difference analysis for being employed (≥1/month) stratified by characteristics of supervisors and employees 3 (T2), 6 (T3) and 12 months (T4) after the end of the training

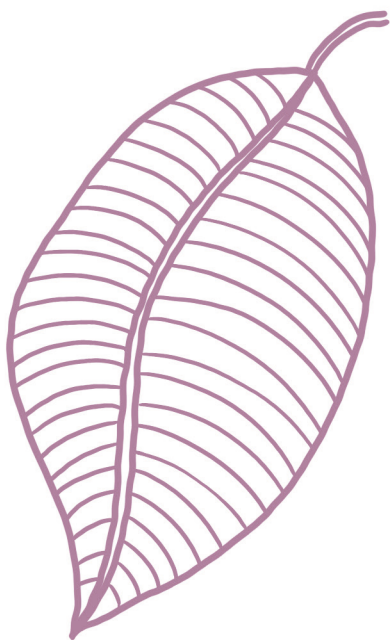
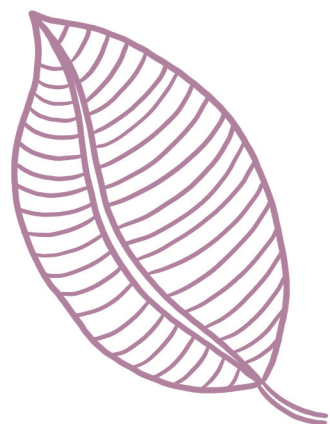
Employed (yes/no) stratified by characteristic of employees and supervisors	β	95%-CI	P-value
Employed and being a women			
T2	0.04	-0.10 to 0.17	0.574
T3	0.04	-0.10 to 0.17	0.574
T4	0.04	-0.09 to 0.18	0.544
T5	-0.01	-0.10 to 0.07	0.746
Employed by age			
T2	0.00	-0.00 to 0.01	0.934
T3	-0.00	-0.00 to 0.00	0.683
T4	-0.00	-0.00 to 0.00	0.718
T5	-0.00	-0.00 to 0.00	0.672
Employed and western			
T2	0.07	-0.22 to 0.36	0.642
T3	0.07	-0.23 to 0.37	0.656
T4	0.07	-0.23 to 0.37	0.656
T5	0.12	-0.18 to 0.40	0.466
Employed and high educational level			
T2	0.13	-0.01 to 0.28	0.073
T3	0.07	-0.08 to 0.22	0.363
T4	0.07	-0.07 to 0.22	0.325
T5	0.02	-0.10 to 0.15	0.720
Employed in region Rivierenland			
T2	0.04	-0.15 to 0.23	0.658
T3	0.08	-0.11 to 0.27	0.416
T4	0.12	-0.09 to 0.31	0.244
T5	0.07	-0.13 to 0.27	0.826
Employed in region Helmond/De Peel			
T2	-0.12	-0.26 to 0.02	0.722
T3	-0.01	-0.16 to 0.14	0.904
T4	0.01	-0.15 to 0.18	0.877
T5	-0.02	-0.19 to 0.15	0.496
Employed in governmental sector			
T2	-0.14	-0.33 to 0.06	0.166
T3	-0.19	-0.37 to -0.00	0.044
T4	-0.07	-0.17 to 0.02	0.120
T5	-0.14	-0.33 to 0.05	0.137

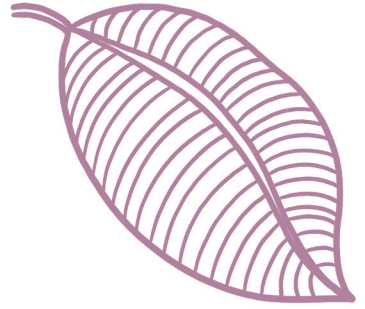
Employed (yes/no) stratified by characteristic of employees and supervisors	β	95%-CI	P-value
Employees working in sheltered workplace			
T2	-0.21	-0.33 to -0.10	0.000
T3	-0.19	-0.32 to -0.06	0.005
T4	-0.17	-0.31 to -0.02	0.023
T5	-0.15	-0.30 to -0.01	0.040
Employed in organization ≥ 250 employees			
T2	-0.11	-0.30 to 0.08	0.245
T3	-0.17	-0.35 to 0.00	0.052
T4	-0.16	-0.34 to 0.02	0.086
T5	-0.20	-0.39 to -0.00	0.045
Employed for more than 5 years			
T2	-0.21	-0.31 to -0.10	0.000
T3	-0.19	-0.30 to -0.07	0.002
T4	-0.16	-0.29 to -0.04	0.012
T5	-0.12	-0.24 to 0.01	0.068
Employed with a temporary contract			
T2	0.20	0.07 to 0.33	0.002
T3	0.24	0.12 to 0.36	0.000
T4	0.23	0.09 to 0.36	0.001
T5	0.18	0.05 to 0.31	0.006
Employed with ≤ 13 euro's wage per hour			
T2	-0.13	-0.33 to 0.08	0.220
T3	-0.05	-0.26 to 0.16	0.647
T4	-0.06	-0.27 to 0.15	0.590
T5	0.01	-0.18 to 0.19	0.922
Employed with a social welfare benefit at 12 months before intervention			
T2	0.29	0.11 to 0.48	0.002
T3	0.28	0.10 to 0.46	0.003
T4	0.27	0.09 to 0.45	0.003
T5	0.27	0.10 to 0.45	0.003
Employed with a work disability benefit at 12 months before intervention			
T2	-0.11	-0.18 to -0.04	0.002
T3	-0.08	-0.15 to -0.01	0.026
T4	-0.06	-0.14 to 0.01	0.099
T5	-0.06	-0.14 to 0.01	0.097

Employed (yes/no) stratified by characteristic of employees and supervisors	β	95%-CI	P-value
Employed by work disability			
T2	-0.01	-0.05 to 0.04	0.765
T3	-0.00	-0.05 to 0.04	0.826
T4	-0.01	-0.04 to 0.03	0.737
T5	-0.00	-0.04 to 0.03	0.896
Employed and with a bad or average work ability			
T2	0.13	0.00 to 0.26	0.046
T3	0.08	-0.05 to 0.21	0.227
T4	0.09	-0.05 to 0.22	0.195
T5	0.05	-0.07 to 0.17	0.411
Employed and satisfied/very satisfied about work			
T2	-0.04	-0.19 to 0.10	0.558
T3	0.04	-0.11 to 0.18	0.639
T4	0.04	-0.09 to 0.18	0.540
T5	0.02	-0.12 to 0.15	0.791
Employed with a mild intellectual disability			
T2	-0.09	-0.24 to 0.05	0.194
T3	-0.09	-0.24 to 0.05	0.211
T4	-0.09	-0.24 to 0.06	0.232
T5	-0.06	-0.21 to 0.08	0.378
Employed with a psychological disability			
T2	0.03	-0.16 to 0.22	0.749
T3	-0.06	-0.26 to 0.14	0.540
T4	-0.06	-0.26 to 0.15	0.584
T5	-0.05	-0.25 to 0.16	0.648
Employed with a physical disability			
T2	0.08	-0.06 to 0.21	0.255
T3	0.09	-0.05 to 0.22	0.198
T4	0.10	-0.03 to 0.24	0.136
T5	0.06	-0.06 to 0.18	0.359
Employed with a low level of education/learning delay			
T2	0.01	-0.11 to 0.12	0.893
T3	0.00	-0.11 to 0.11	0.999
T4	-0.01	-0.11 to 0.09	0.859
T5	0.01	-0.08 to 0.11	0.786

Employed (yes/no) stratified by characteristic of employees and supervisors	β	95%-CI	P-value
Employed by age supervisor			
T2	0.00	-0.01 to 0.01	0.805
T3	0.00	-0.01 to 0.01	0.639
T4	0.00	-0.01 to 0.01	0.621
T5	0.00	-0.01 to 0.01	0.977
Employed and women as supervisor			
T2	0.14	-0.05 to 0.32	0.154
T3	0.04	-0.16 to 0.24	0.721
T4	0.02	-0.19 to 0.24	0.858
T5	-0.05	-0.23 to 0.13	0.600
Employed and supervisor with a high educational level			
T2	-0.05	-0.17 to 0.07	0.405
T3	-0.03	-0.15 to 0.09	0.660
T4	-0.02	-0.14 to 0.10	0.763
T5	0.02	-0.09 to 0.13	0.731
Employed and number of hours supervisor works			
T2	0.00	-0.02 to 0.03	0.760
T3	0.01	-0.02 to 0.03	0.508
T4	0.01	-0.02 to 0.03	0.469
T5	0.01	-0.01 to 0.04	0.312
Employed and number of years supervisors employed at current employer			
T2	0.00	-0.00 to 0.01	0.711
T3	0.00	-0.00 to 0.01	0.405
T4	0.00	-0.00 to 0.01	0.452
T5	0.00	-0.00 to 0.01	0.284
Employed and supervisors that guides <10 employees			
T2	0.10	-0.08 to 0.27	0.284
T3	-0.01	-0.20 to 0.17	0.876
T4	-0.07	-0.24 to 0.10	0.430
T5	-0.10	-0.24 to 0.04	0.158

Employed (yes/no) stratified by characteristic of employees and supervisors	β	95%-CI	P-value
Employed and supervisor that guides <10 employees with a work disability			
T2	0.19	0.03 to 0.34	0.020
T3	0.14	-0.03 to 0.31	0.102
T4	0.10	-0.05 to 0.26	0.186
T5	0.08	-0.06 to 0.23	0.260
Employed and supervisor number of years of experience			
T2	-0.01	-0.02 to 0.00	0.091
T3	-0.01	-0.03 to 0.00	0.067
T4	-0.01	-0.03 to 0.00	0.060
T5	-0.01	-0.02 to 0.00	0.227





Chapter 8

General discussion



General discussion

The overall aim of this thesis was to address the importance of improving the health and sustainable employability of workers in a vulnerable position, and to investigate how they can be adequately supported at the workplace by occupational health professionals (OHPs) and their supervisors. Before discussing the main findings of this thesis, I would like to return to the phrase 'work is healthy'. In essence, having a job is healthier than having no job. However, some workers are placed in a more vulnerable position regarding work and health, because of their (health) problems on multiple life domains and difficulties to (re-)enter the labor market and to be sustainably employed. Therefore, studying how to facilitate sustainable employment of workers in a vulnerable position was an essential part of this thesis. In this chapter, the main findings of this thesis are summarized. Then, the diversity of the target group 'workers in a vulnerable position' are described and the main methodological considerations. Thereafter, the findings in this thesis are discussed by the following themes: 1) reflecting on the complexity of systems for workers in a vulnerable position and 2) the role of OHPs and supervisors in these complex systems. Finally, recommendations for research, policy and practice are described. This chapter will end with the main conclusions of this thesis.

Main findings

Part I: The effects of exit from work among workers in a high and low socioeconomic position

The first aim of this thesis was to investigate the differences of exit from work on health between workers with a low socioeconomic (SEP) and workers with a high SEP. Chapter 2 describes the results of a systematic review which indicated that the effects of exit from work on health are more negative among workers with a lower SEP. This group of workers may possess fewer resources (e.g., poorer financial situation, unhealthier living conditions) to deal with the changes in one's life following exit from work. This could more rapidly result in health declines after exit from work in groups of workers with a lower SEP. These findings emphasized that the promotion of health, especially after exit from work, requires more attention among workers with a lower SEP, as opposed to workers with higher SEP. Moreover, the findings of this review also indicated that there is a higher need to prevent exit from work among workers with a lower SEP, as they might experience more negative consequences of job loss.

Part II: The role of occupational health professionals in supporting lower socioeconomic position workers with problems on multiple life domains

The second aim of this thesis was to develop and evaluate a preventive intervention for OHPs to improve the health and sustainable employability of workers with a lower SEP and with problems on multiple life domains, and to explore facilitators and barriers for implementation of these type of preventive interventions in occupational health practice. Chapter 3 describes that workers with a lower SEP more often experience problems on multiple life domains, but also perceive difficulties with solving problems or use passive or avoidance coping styles towards these problems. Therefore, an intervention mapping protocol was used to adapt the existing Participatory Approach at the workplace to include a broader perspective on health following the Positive Health approach. Herein, OHPs guide and support this group of workers in identifying and solving problems on multiple life domains to improve their health and sustainable employability. This resulted in the Grip on Health intervention, which was evaluated in a pilot implementation study, as described in chapter 4. OHPs were trained to deliver this intervention among lower SEP workers. A mixed methods process evaluation showed that the intervention can be a successful method to support lower SEP worker with problems on multiple life domains. However, OHPs experienced several barriers on organizational level to implement this intervention in practice, such as lack of time or permission from the involved employer to deliver the Grip on Health intervention. Chapter 5 further explored facilitators and barriers in the organizational and socio-political context for implementation of this type of interventions in a qualitative study. The results of this chapter showed that it is challenging to implement a preventive intervention that considers multiple life domains among workers with a lower SEP for several reasons. For an intervention that considers multiple life domains, both stakeholders and professionals in- and outside occupational health practice need to be involved. However, there is not only a lack of collaboration among these stakeholders and professionals, but also none of them feels fully responsible to solve problems on all life domains. Moreover, a preventive intervention is difficult to implement in occupational health practice, as stakeholders in chapter 5 experience that employers still insufficiently invest in the prevention of health risks and problems for their workers. In the end, employers in the Netherlands determine the amount of time OHPs can spend on prevention. As a result, OHPs need to spend their time mainly on guiding and supporting workers already on sick leave due to health problems, but not on preventing these problems. This was also illustrated by the results of the pilot implementation study in which many OHPs experienced a lack of time to implement the Grip on Health intervention (chapter 4).

Part III: The role of supervisors in supporting workers with a work disability

For the third aim of this thesis, we qualitatively explored the needs of workers with a work disability with respect to the guidance by their supervisors in relation to their sustainable employability and quantitatively evaluated an intervention for supervisors to improve the sustainable employability of workers with a work disability. The intervention is a supervisor training to improve the guidance they provide to workers with a disability, which is called 'Mentorwijs'. In chapter 6, interviews were performed among workers with a disability to obtain experiences about the guidance of supervisors who followed the 'Mentorwijs' training. Even though workers were very satisfied with the guidance at the workplace, the qualitative results also showed that workers wanted more autonomy and challenges or learning opportunities in their work. Moreover, they mentioned that feeling and treated equal to colleagues and their supervisors is important for having positive relations at the workplace. Supervisor skills that are important for workers with a work disability are communication skills, a supervisor that takes their opinion seriously and listens to them, a supervisor who can adequately deal with problems at the workplace, and who is available for help and asking questions and gives appreciation. These skills are also taught to supervisors in the 'Mentorwijs' training. In chapter 7, we evaluated 'Mentorwijs' by means of questionnaires and register data. This training was developed to train supervisors in knowledge, attitudes and skills needed to guide workers with a work disability. The results indicated that the training improved knowledge and self-efficacy of supervisors regarding the guidance of workers with a work disability. However, no effects were found on the supervisors' (intention to) behaviors regarding the guidance of workers with a work disability. Moreover, the sustainable employability of workers with a disability did not significantly improve on the long-term. These results indicated that this training is a promising tool to improve the supervisor guidance of workers with a work disability, but that a more intensive training may be needed to really change supervisors' behavior and have an impact on workers' sustainable employability. The extent to which such trainings can be implemented by supervisors at the workplace also depends to a large extent on contextual factors in the organization, such as time, resources and organizational policies to enable supervisors to adequately guide workers with a work disability.

Characterize and define workers in a vulnerable position

Two different groups of workers were studied in this thesis, namely workers with a lower SEP and workers with a work disability. We defined workers with a lower SEP either by a lower educational level and/or a blue-collar occupation and workers with a work disability by a (mild) intellectual disability, psychological disability, physical disability, (very) low level of education and/or learning delay. As was described in the introduction, both lower SEP workers and workers with a work disability have a more vulnerable position in the labor market, may face more

difficulties to remain sustainably employed, and may have a higher risk of early drop out of the labor market. Both groups also more often experience problems on multiple life domains and may face more difficulties to deal with these problems (1). Moreover, a large part of workers with a work disability may also have a lower SEP, and vice versa. While these two groups have many similarities regarding risk factors for sustainable employment, there are also differences between these groups. In terms of employment, workers with a lower SEP in this thesis either had temporary or fixed contracts, in which they were covered by the Working conditions Act and had the legal opportunity to receive guidance and support from OHPs. In contrast, workers with a work disability often did not have a regular contract and were covered by the Participation Act in which they can receive additional guidance and support from municipalities. Moreover, lower SEP workers are in general not defined by their SEP in their job, while for workers with a work disability their disability is used to define them as a certain group with specific needs for sustainable employment. Hence, these two groups are different in terms of employment and support at work that is offered to them, meaning that interventions to improve their sustainable employability need to be aligned to the characteristics and the legal context of a specific group.

To define and align interventions to a specific group of workers, may not always be desirable, as there may also exist large differences within these two groups. For instance, workers who participated in the 'Grip on Health' intervention faced a diversity of (health) problems, and workers with a work disability had very different type of disabilities meaning they have other needs in relation to their sustainable employability. This calls for a more person-centered approach to improve their sustainable employability. Moreover, defining workers according to their SEP or work disability, as we did in this thesis, may also have negative consequences for these two groups. For instance, there is much debate about the use of terms 'low SEP' and 'work disability'. The term 'low SEP' may indicate that people have a lower position in society and are undervalued. Whereas people with a more practical education and/or occupation are really valuable for society. Especially nowadays, as there are various sectors with more practical occupations that are facing severe staff shortages. Moreover, the term 'low SEP' may result in biased views, as people who have been labelled as having a low SEP have been deprived of the ability to show 'healthy' behaviors or characteristics (2). The same may account for the term 'work disability'. Literature shows that both regular workers and employers have a biased view and may underestimate the performances of workers with a disability (3). As a result, employers may be hesitant to hire workers with a work disability and regular workers may not want to work together with workers with a work disability. In the end, this may impede the integration of workers with a work disability in the regular labor market and thereby their sustainable employability. Thus, putting workers in certain boxes is also a risk

for the employability of workers themselves, and in light of staff shortages also for society.

Still, the use of definitions to distinguish certain groups may help researchers or decision makers to develop interventions that better align with the characteristics and needs of certain groups. General interventions are likely to be less effective, as they are not well adapted to the specific needs of workers for whom the intervention is intended (4) and may even increase health inequalities (5). However, defining workers according to their SEP or work disability may not justify the complexity of factors influencing their health. As was described in the introduction, factors that may negatively influence their health, besides health care and healthy lifestyle, can according to the World Health Organization (WHO) be summarized into the social determinants of health (SDH) (6). SDH, such as income, having a job and healthy working and housing conditions, seem to be more important than health care and a healthy lifestyle for improving health. In line with this reasoning, the Participatory Approach in this thesis was adapted to address and solve problems on multiple life domains. Therefore, we may need to put less emphasis on putting workers in certain boxes and focus more on a combination of SDH, instead of focusing on specific groups.

Methodological considerations

In the following section the main methodological concerns of this thesis are discussed: 1) indicators for workers with a lower socioeconomic position, 2) recruitment and participation of workers in a vulnerable position, and 3) study designs to evaluate interventions in practice.

Indicators for workers with a lower socioeconomic position

For workers with a lower SEP, the term 'SEP' refers to social and economic factors that influence the position of individuals or groups within society, often determined by occupation, education, or income level (2). Other indicators for the SEP are the amount of material circumstances or possessions of an individual, or the social and/or economic circumstances of where people live (7). Indicators for the SEP are often related and substantially overlap, meaning that a higher level of education usually leads to better jobs and a higher income. Therefore, one measure is often used as a proxy to determine SEP. However, it's not always that simple, as the indicator used to determine whether someone has a low or high SEP does not always match other social and/or economic factors of an individual. For example, a construction worker who could be identified as a worker with a lower SEP, can still have a high income. Otherwise, a person with a lower educational level could also be identified as a worker with a lower SEP and can still obtain extra qualifications during their working career and have a high income. According to

the life-course perspective, SEP can be seen as a dynamic aspect that varies over an individual life's course (2). Recent research shows that the social status may be a better indicator to identify workers with a lower SEP. The social status refers to the material circumstances in which people grow up and live and have a major influence on the ways in which people think and act with their social environment (8). Individuals with more unhealthy conditions are more orientated on how to deal with the external (unhealthy) environment and have a lower sense of personal control due to a lack of resources available to deal with (health) problems (8). As a result, they are their whole life disadvantaged making it more difficult to benefit from educational and employment opportunities to increase their social status.

Considering the information described above, we could also debate whether the group of workers in this thesis really consisted of workers with a lower SEP and whether the results in this thesis accounts for the whole population of workers with a lower SEP. Workers with a lower SEP included in the studies of this thesis had regular jobs, while there may also be a group of people with an even lower SEP, affecting generalizability of findings in this thesis. For example, precarious workers, workers in sheltered workplaces or those long-term unemployed with physical and/or mental health problems. Hence, researchers need to carefully consider which indicators they use to identify workers with a lower SEP, as it is a dynamic aspect, and the use of certain indicators does not guarantee that lower SEP workers are identified.

Recruitment and participation of workers in a vulnerable position

For the pilot evaluation of the Grip on Health intervention we aimed to recruit 50 workers. However, in the end OHPs implemented the intervention among 27 workers. Hence, it was difficult to recruit workers with a lower SEP, as was also described in chapter 3 and 5. This is a limitation, because including the perspective of workers in research is essential; workers may hold other views, as opposed to other stakeholders at the workplace (9) and involving workers in research allows a better understanding and insight about the problems they experience and how to solve these problems (10). Despite the relatively low number of workers who participated in Grip on Health, chapter 3 and 5 still provided relevant insights on whether Grip on Health can support lower SEP workers in solving problems on multiple life domains and can be implemented in occupational health practice. Reasons for the difficulty to recruit workers with a lower SEP were also identified in these chapters, and mainly focused on the role of OHPs who implemented the intervention.

For the process evaluation in chapter 5, OHPs were asked to preventively implement Grip on Health, as part of their daily practice. The main difficulty for OHPs to recruit workers with a lower SEP was that they were more often in

contact with workers on long-term sick leave. Lower SEP workers do not often tend to seek contact with an OHP for prevention. This is in line with other research, showing that vulnerable populations are less likely to seek contact with a doctor, as they have a lower level of trust in doctors (11). In case they start experiencing health complaints, they will primarily seek contact with a general practitioner. OHPs could be seen as someone that works for the employer (12), as was also described in chapter 3. Workers may not always be aware of the preventive and independent role of OHPs and that these professionals can also help workers with problems outside the workplace. Moreover, lower SEP workers may not always prefer that an intervention, to address problems on multiple life domains is provided by their employer. The results in chapter 3 and 5 showed that workers with a lower SEP are not used to and/or may not like to talk openly about their problems outside the workplace, as they may want to keep their work and private life separate (13). A lower health literacy among workers with a lower SEP may be another reason to not visit a doctor. Patients' ability to feel the need and to subsequently seek contact with a doctor was affected by a lower health literacy (14). Preventively this may be even a larger problem, as a direct reason to visit a doctor is not always present, and workers with problems on multiple life domains may have many things going on in their lives, such as financial problems or caring responsibilities (4).

In contrast, in the evaluation of 'Mentorwijis' we did succeed to recruit a sufficient number of workers with a work disability to participate in the study. These workers were mainly recruited through their supervisor or employer. Supervisors and employers are often (daily) in contact with their workers, which could make it easier to recruit workers. Whereas the OHPs in our study reported that they often do not have any contact with most workers, except when workers are on sick leave or with workers who were referred to an OHP. Moreover, participation for workers with a work disability in the 'Mentorwijis' evaluation took very little time and effort, as the researchers visited the workplaces and workers could participate during work hours in which they only needed to fill in a short questionnaire or participate in an interview. Nothing else was expected from workers, as supervisors received the 'Mentorwijis' training and were asked to implement the newly acquired knowledge and skills in the daily guidance of workers with a disability. Reducing the burden for participants was also identified as a success factor in another study on how to successfully recruit adults with a low SEP (15). Conversely, the Grip on Health intervention required from workers to openly discuss their health-related problems not only with the OHP but also with their supervisor or another stakeholder from outside the workplace. However, not all lower SEP workers want to talk openly about their problems in- or outside the workplace with an OHP or supervisor, making it more difficult to recruit these workers.

Based on the information described above, we learned the following lesson regarding the recruitment and participation of workers in a vulnerable position at the workplace. The recruitment of workers through an OHP may not be desirable, as workers, and especially those with a lower SEP, may feel less at ease to talk openly about their (health) problems with a professional and/or physician. Probably caused by unfamiliarity about their role or a lack of trust (16), which is especially the case for occupational physicians (OPs)(12). Relationships of trusts are one of the essential parts to reach and involve workers with a lower SEP (10). Therefore, it may be better to recruit workers for interventions through their supervisor. In most cases, workers have built a relationship of trust with their supervisors, due to more frequent contact and with their role of being a first point of contact in case of (health) problems.

Study designs to evaluate interventions in practice

In this thesis two interventions were evaluated in occupational health practice, namely the Grip on Health and 'Mentorwijs' intervention. The evaluation of Grip on Health consisted of a process evaluation to gain more understanding on how interventions work in real world settings (17). An existing evidence-based intervention (i.e. the Participatory Approach) was adapted and tailored to the needs and wishes of workers with a lower SEP and OHPs. Since Grip on Health was based on the evidence-based PA, an evaluation of Grip on Health in a randomized controlled trial (RCT) was deemed not needed. Therefore, a mainly qualitative process evaluation was conducted to determine how and under what conditions the intervention is feasible and applicable among both lower SEP workers and OHPs. Moreover, conducting a RCT was potentially less feasible for several reasons. Researchers argue that it is hard to obtain the required conditions for an effect evaluation, due to the complexity of interventions and the context (18). The results of chapter 4 and 5 in this thesis showed that the implementation of Grip on Health was complex in occupational health practice, and thus difficult to control for in a RCT. For instance, Grip on Health was implemented in different organizations and delivered by different OHPs among workers in different types of workplace settings. In case an RCT was conducted it would therefore have been difficult to differentiate whether intervention effects result from the intervention itself or from differences within or between organizations (18). Thus, even if an RCT shows positive results, it remains uncertain whether these results also apply to other workplace settings, and in case of negative results, it is hard to explain why positive effects are missing. Therefore, we should explore alternative research designs that provide more knowledge on how an intervention works in the complexity of work settings. For instance, participatory action research, realist evaluation and responsive evaluation are all methods that actively engage participants and other relevant stakeholders in defining changes and outcomes for evaluation (19-22). These methods offer more flexibility to align evaluations to

workers' needs and relevant factors in the work context. Moreover, they provide more knowledge on how and under what circumstances interventions work and how they can be improved and adapted to a specific context.

The evaluation of the 'Mentorwijs' training contained an effect evaluation among supervisors and workers with a work disability. The evaluation among supervisors consisted of a before- and after measurement without a control group. Among workers a difference-in-difference study design was used, with a control group, but not randomized. A difference-in-difference is a feasible alternative for an RCT, because it is a more feasible approach to study changes as a result of the intervention (18). In the difference-in-difference analysis we could evaluate the effect of 'Mentorwijs' under real world conditions and strive for optimal comparability between the intervention and control group, as we could control for major confounding variables. Also, researchers do not need to consider a control group during implementation. However, in the evaluation of 'Mentorwijs' it was difficult to differentiate effects of the intervention from unmeasured and/or unmeasurable factors in the organization, such as organizational culture and HR-policies (18). Although an RCT may have circumvented this issue, it may have been too rigid to handle the flexibility of the 'Mentorwijs' training, wherein the trainers had the possibility to adjust the protocol of the training and respond to the supervisors' needs. Also, supervisors had the opportunity to choose what parts of the training they implemented or not implemented in practice. Therefore, also in this case, other study designs, such as participatory action research, realist evaluation and responsive evaluation, would be desirable in the future to gain more knowledge on how the 'Mentorwijs' training is implemented and to determine how and under what real world conditions the intervention is effective.

Reflecting on the complexity of systems

The role of the worker in the complexity of systems

Throughout this thesis we focused on the health and sustainable employability of workers in a vulnerable position who are more at risk for problems on multiple life domains and for early drop out of the labor market. To reduce health inequalities, we therefore need to focus more on the needs of this group of workers and how we as society can provide additional support to improve their health and sustainable employability. However, in the Netherlands, much emphasis is placed upon the individual responsibility and self-control of individuals. This is also reflected in the definition of the Positive Health approach, which states that health is the ability to adapt and manage oneself in the light of the physical, emotional, and social challenges of life (23). However, research shows that not every individual has that ability. A recent report of the Netherlands scientific council of government policy (WRR in Dutch) showed that people's ability for self-control is dependent on their

thinking and doing abilities (denk- en doenvermogen in Dutch)(24). Hence, thinking and doing abilities are important as they influence the extent to which individual persons can self-manage and adapt (i.e. self-control). For instance, workers with a lower SEP may have less cognitive skills (i.e. fewer thinking abilities) and may find it more difficult to act and therefore, use more passive coping styles (i.e. fewer doing abilities). Furthermore, workers with problems on multiple life domains more often experience chronic stress (25), which also affects people's thinking and doing abilities. Problems on multiple life domains are interrelated and may enforce each other, leading to a vicious cycle (25). Moreover, the time and energy that workers with problems on multiple life domains need, to deal with problems in their daily life, may compete with the time and energy for solving problems, which could improve their health on the longer term. McKee et al. (2017), argues that we as society must focus more on the relation between health and social circumstances (26). There is a large group of people whose lives could be characterized as precarious, due to factors related to employment, such as low skills, low wages, and harsh working conditions, but also economic insecurity, inadequate housing, health problems and a lack of social networks. This means that the philosophy of the Dutch government which focuses in general on individual responsibility and self-control of individuals does not account for everyone and may even increase socioeconomic health inequalities.

Solving problems on multiple life domains may also be challenging for workers as help and solutions for their problems may lay within different domains, such as occupational health care, curative health care, the social and/or the private domain. As a result, they may come in contact with different (health)professionals who are employed in different kind of institutions, such as health care services, social, labor and/or welfare services (loketten in Dutch). Moreover, these professionals may also provide workers with different solutions for different kinds of problems, and there is no coordinator for a comprehensive approach to address their problems. As a result, workers can easily loose overview and may face difficulties in finding their way in this complex system of different professionals across institutions and domains, in which workers are mainly left to their own responsibility to coordinate solutions and actions which are set by different professionals. The difficulties lower SEP workers face with solving problems on multiple life domains that are described in this paragraph were also found in the process evaluation of Grip on Health. Based on this information, researchers argue that we should make a shift from the individual responsibility to a society which focuses more on the collective; a society in which we protect and support the most disadvantaged and enable them to increase their ability to adapt and self-manage their health.

The role of occupational health professionals in the complexity of systems

The results of this thesis indicate that OHPs can play an important role in supporting workers in a vulnerable position to remain sustainably employed, by providing adequate guidance at the workplace. However, the extent to which they can exert their role largely depends on contextual factors in occupational health practice and beyond. To adequately address problems on multiple life domains, OHPs can play an important role in supporting workers in identifying and solving problems. However, the way occupational health care is organized in the Netherlands generates various barriers for OHPs being able to support workers in addressing problems on multiple life domains. OHPs can discuss problems on multiple life domains, as part of their normal way of working, but they do not always have the time to act on it, or do not even have the opportunity to preventively support workers in solving these problems. First, the extent to which OHPs have sufficient time or are able to preventively support workers depends on the type of contracts between an employer and occupational health service. However, as this thesis showed, preventive occupational health services are often not included in these contracts, and basic contracts mainly focus on the guidance of workers on long term sick leave. This is rather unfortunate, as the new Working Conditions Acts, which was launched in 2017, provided more attention to prevention (27).

Second, collaboration with other health professionals in other domains is essential, but this is hindered by barriers on a system level. As was described earlier, workers with problems on multiple life domains may come in contact with (health) professionals that are employed in different kind of institutions, which are fragmented across different domains. For instance, occupational health care is by law strictly separated from curative health care, and policies regarding employment are regulated from a different ministry, compared to policies regarding health. As a result, professionals across services and domains hardly collaborate to align solutions or to discuss which solutions needs to be implemented (first). This was also one of the main obstacles in the implementation of the Grip on Health intervention. Considering the obstacles described above, the Dutch government may need policy reforms, wherein (health) professionals can more easily collaborate between domains and align solutions.

Third, OHPs are, according to the privacy regulations, not allowed to share health related information with the employer. Health related information can only be shared with other health professionals in case the worker gives explicit permission for this (28). The privacy of the workers is highly valued among OHPs and may therefore hamper addressing problems on multiple life domains in collaboration with other health professionals and/or the employer. Moreover, according to the Dutch Gatekeeper Act, OHPs are legally obliged to give advice on return to work,

including their work ability. These legal rules and regulations may force OHPs to take the role of the expert and mainly provide advice on their work functioning and work-related problems. Consequently, less emphasis may be on adequately solving problems that lay outside the workplace, and this makes it difficult for OHPs to take on the role of the process leader, as was expected of them in the Grip on Health intervention. Being a process leader was perceived as challenging by OHPs in this thesis, as in the intervention they needed to remain in a neutral position, withhold themselves from giving advice and let the worker and employer come up with solutions. Considering their obligations to give advice and mostly on work-related problems, we could question whether an OHP, and especially an OP, is the best person to act as a process leader.

The role of supervisors in the complexity of systems

The results of this thesis also indicated that supervisors could play an essential role in the sustainable employability of workers in a vulnerable position. The extent to which they can fulfill this role is also dependent on the organizational and socio-political context in occupational health practice. In this thesis supervisors were considered important for the early identification of workers at risk to drop-out of the labor market. They might be the first person to notice whether a worker is at risk and could refer workers timely to an OHP. However, in the Netherlands, supervisors are not allowed to discuss health related problems (28). Supervisors discussing health-related problems could therefore violate privacy regulations. Moreover, in case workers discuss their health-related problems with their supervisors may contain negative consequences for their employment contract. For instance, a study on the choices of employers regarding employment indicated that employers less often hire or extend contracts of workers with health complaints (29). According to the same study, employers also tend to invest more in workers with fixed contracts, as opposed to workers with temporary contracts (29). Temporary or flexible contracts are more prevalent among workers in a vulnerable position, and laws- and regulations regarding employment contracts are more focused on protecting workers with a fixed contract (30). As a result, workers in a vulnerable position are once again negatively affected by factors on a system level.

Privacy regulations have been established to protect the worker, because of hierarchical relationships between a worker and supervisor. This could play an even bigger role among workers with a lower SEP and/or with a work disability. Whether workers discuss their health-related problems with supervisors is strongly dependent on the relationship with their supervisor (31). Having a positive and supportive relationship with your supervisor was identified as one of the most important factors for the disclosure of a disability (31). Moreover, not discussing their health-related problems may hamper the ability of employers to provide

accommodations at the workplace (31, 32). In case workers do decide to discuss health-related problems with their supervisor, the extent to which supervisors can provide support is largely dependent on organizational factors. For instance, there are no regulations available that enable adequate guidance of workers with a work disability at the workplace. The time that supervisors receive for the guidance of this group of workers may therefore vary between organizations. The results regarding 'Mentorwijijs' also showed that supervisors do not always have sufficient time to adequately guide workers with a work disability and that policies from management regarding the guidance of workers with a work disability are not always present in organizations. A study among supervisors showed that commitment of management was found to be important for the extent to which supervisors can dedicate time to the provision of and provide accommodations to workers with a work disability (33). Moreover, research also showed that a clear organizational policy illustrating an organization's view on facilitating preventive support, could create a more supportive work environment (34). Therefore, anchoring the guidance of workers with a work disability in organizational policies could enable a work culture wherein workers feel supported by their organization and supervisors have the possibility to provide support.

Recommendations

Based on the findings of this thesis and the topics that have been discussed in this chapter, recommendations can be made for research, policy, and practice. To improve the health and sustainable employability of workers in a vulnerable position it is essential to consider the characteristics of the target group, but also the role of other stakeholders, such as OHPs and supervisors. However, workers, OHPs and supervisors are part of a larger system which is also important to take into consideration for the health and sustainable employability of workers in a vulnerable position. Figure 1 shows the characteristics of workers in vulnerable position that were part of this thesis and the involved stakeholders and larger organizations and institutions.

Workers in a vulnerable position

This thesis showed that workers in a vulnerable position find it more difficult to improve their health and sustainable employability due to various problems on multiple life domains, affecting their ability to adequately solve them. Moreover, help and solutions for problems on multiple life domains may lay within different domains, making it even more difficult to solve their problems. The aim of one of the interventions in this thesis, namely Grip on Health, was supporting workers with solving problems on multiple life domains. In this way, this thesis contributed to the, until so far, limited knowledge on how to effectively deal with problems on multiple life domains among workers in a vulnerable position. More research is

needed on the relation between problems on multiple life domains and the health and sustainable employability of workers in a vulnerable position. For this, we should focus more on the social determinants of health and qualitatively assess from the worker perspective, its role and importance in dealing with problems in their daily lives.

The results of this thesis suggest that interventions addressing problems on multiple life domains in practice should not only focus on specific groups of workers. Instead, these types of interventions must focus on workers that more often face a combination of factors (i.e. social determinants of health) that make them vulnerable, than solely focusing on workers with a lower SEP. However, at some point policy makers and/or stakeholders in practice need to make a choice for whom they will make interventions available. The discussion of indicators for workers with a lower SEP in the methodological considerations showed that additional research is needed on how to identify workers in more vulnerable position. For this we should focus more on a combination of indicators that are important to focus on regarding health and sustainable employability. For instance, the social status (i.e. material circumstances in which people grow up and live) could be further explored as an indicator to identify workers in a vulnerable position.

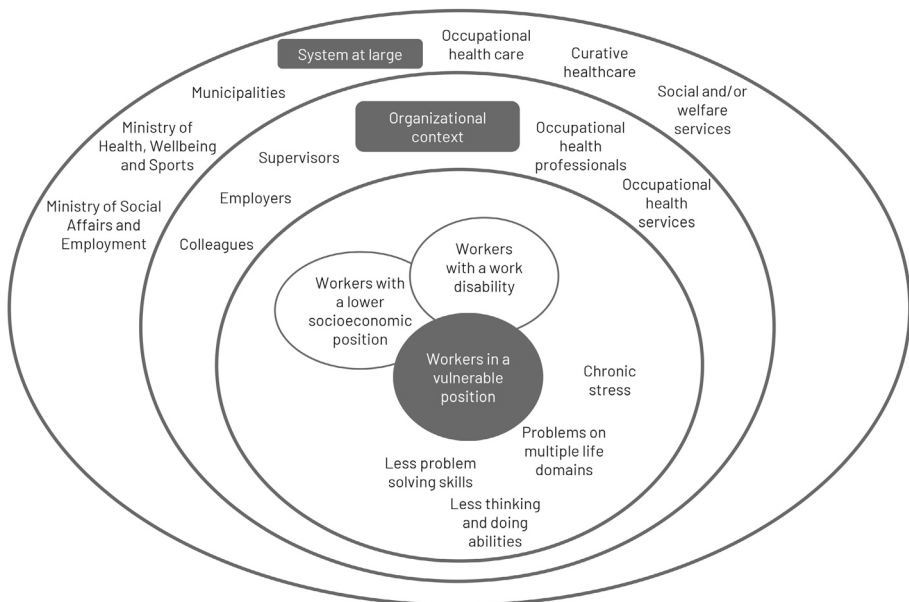


Figure 1. Workers in a vulnerable position, involved stakeholders and organizations and institutions

Organizational context: occupational health professionals and supervisors

The results of this thesis showed that the recruitment of workers in a vulnerable position is difficult for OHPs. Therefore, OHPs should invest in alternative ways to reach this group for preventive interventions that aim to improve their health and sustainable employability. The discussion on recruitment and participation of workers in a vulnerable position in the methodological considerations provided several ideas that can be applied in practice. First, OHPs could collaborate with people at the workplaces itself, that are already (daily) in contact with workers and have built a relationship of trust with these workers (10). For instance, supervisors can put OHPs in contact with workers at risk for developing health problems and/or at risk to drop early out of the labor market. Another way to reach workers in a vulnerable position is by collaboration with professionals from outside the workplace, who are working in existing networks that already successfully reached the target group (15). For example, job coaches in municipal organizations, social workers in community centers or general practitioners.

OHPs could also reach workers by making more use of periodic occupational health screenings, as they do not have any contact with most workers except when workers are on sick leave or with workers who were referred. However, OHPs do not always have sufficient time to discuss results following a health screening and support workers to improve their health and sustainable employability (35). For OHPs to preventively support workers in a vulnerable position requires a structural change in their duties and responsibilities in practice, as the results of this thesis showed that it is mainly focused on providing advice on return to work, leaving limited time available for preventive activities. A possible solution is delegating tasks to other health professionals, who have more time for preventive activities and could also provide advice for problems on other life domains than work. Professionals in the workplace who are according to privacy regulations allowed to discuss health related problems, such as occupational nurses or occupational social workers could perform these tasks. Moreover, OHPs could also work more together with a prevention officer, who can perform some of OHP's preventive tasks (36). However, this thesis also confirmed that workers in a vulnerable position, may not always want to disclose health problems with a professional that is related to the workplace. Until now, literature on disclosing health problems mainly focused on the role of OPs and/or professionals in curative health care. Therefore, additional research is needed to gain more insight on how to change the perception of workers that OHPs work for the employer, and whether these perceptions differ between various types of OHPs.

Another way to expand the preventive activities of OHPs in practice is by making prevention a more extensive component of the contracts between OHPs and employers, as the results of this thesis showed that prevention is often a limited

component in these contracts (36). A possible way of convincing employers to invest in prevention is by making structural changes in legislations, such as making prevention a bigger part of the Working Conditions Act. However, this also requires more surveillance and enforcing employers to comply with the legislation. Furthermore, research shows that many employers have a negative attitude towards prevention (35), which might hamper implementation of preventive activities (37). Thus, for extending preventive activities in practice we need to change the attitudes of employers towards prevention. For example, by providing employers more information about the (financial) benefits of prevention, and the potential costs of workers who are on sick leave (36). More research is needed on how to convince employers to invest in prevention; is the underlying explanation their negative attitude towards prevention, or are there other factors that limit the extent to which they invest in prevention? This type of research is even more relevant for the target group in this thesis, as employers tend to invest even less in workers in a vulnerable position. More knowledge on the benefits of preventive activities and preventive support would make it more feasible for OHPs to expand their preventive duties.

Supervisors should also pursue a more active approach towards prevention in practice and a supportive work environment for workers in a vulnerable position. As results of this thesis indicated, supervisors could play an important role in early identification and referral of workers at risk to (health) professionals. For this, it is important that every supervisor is trained in the importance of sustainable employability, and that they stimulate workers to make use of preventive interventions. Training supervisors should also focus on leadership behaviors and how to establish positive relationships between supervisors and workers (38, 39), which was also part of one of the interventions evaluated in this thesis (i.e. 'Mentorwijijs'). Ample research, including studies in this thesis, show that positive and supportive relations play an important role in the employment and work participation of vulnerable workers (31, 40). Investment in leadership through training and strengthening relationships at work may especially be important for workers in vulnerable position, as they might have less job autonomy and other resources (38). Moreover, positive, and supportive relations also play an important role in the extent to which workers discuss their health-related problems with supervisors, and receive appropriate accommodations for that (31, 32). However, workers in a vulnerable position might not feel safe to disclose health-related problems, due to their more vulnerable position in the labor market (e.g. more often temporary or flexible contracts). Therefore, it is also important to train supervisors on how to ensure a work culture wherein workers feel safe to talk about health-related problems, which was also part of the 'Mentorwijijs' training.

The results of this thesis indicated that training supervisors in the guidance of workers in a vulnerable position showed no significant effects on the long-term. The discussion of study designs in the methodological considerations showed that it was difficult in a difference-in-difference study design to differentiate effects of the intervention from unmeasured and/or unmeasurable factors. These factors may have played a role in the lack of significant effects, but lay outside the scope of 'Mentorwijijs' and could not be adjusted for in the evaluation of the 'Mentorwijijs' training. Therefore, more research is needed to examine the effectiveness of 'Mentorwijijs' to determine how and under what conditions the intervention is effective. For instance, training supervisors is not enough, as supervisors should also have a supportive organizational environment to be able to provide the support that workers need. This implies that employers should develop and monitor organizational policies that make it possible for supervisors to adequately guide workers in a vulnerable position, including providing time and resources to supervisors that enable them to support workers in a vulnerable position.

System at large

According to the literature, there are three components to reflect on one's sustainable employability: 1) work ability (i.e. physical, mental, and social wellbeing), 2) vitality (i.e. levels of energy and motivation) and 3) employability (i.e. ability to adequately perform various tasks and to function optimally at work now and in the future)(41). This thesis mainly focuses on the components work ability and vitality, and to a lesser extent on employability regarding their position in the labor market. Hence, the following recommendations mainly focus on how workers in a vulnerable position can remain sustainably employed in their current job and/or organization. Whereas for improving the health and sustainable employability of workers in a vulnerable position strengthening their position in the larger system of the labor market is also needed.

A person-centered approach is required to support workers in a vulnerable position to remain healthy and sustainably employed. However, support from professionals is fragmented across different domains, and often focused on one life domain. This means that for a person-centered approach collaboration is needed with professionals from different domains. However, this thesis showed that collaboration is difficult, due to strict separation between occupational and curative health care. Therefore, we should explore possibilities of one institution or an external expert who can guide the process or is responsible for dealing with problems on multiple life domains. For families with problems on multiple life domains an external expert (i.e. wrap around care) is often used for the coordination of care (42). Workers in a vulnerable position may end up in a vicious cycle, and an external expert may help them to break out of this cycle and

to gain a clearer overview of the problems in their lives. This expert could also initiate collaboration and cooperation with other professionals and coordinate which professional does what and when. Another way to promote collaboration between professionals from different domains is by providing them with more information about the responsibilities of professionals in other domains and with practical ways to collaborate (43). This is needed, as professionals are not always familiar with the duties and responsibilities of professionals in other domains and may have misconceptions about their role (44). This kind of information could be provided in a joint training of professionals from occupational and curative health care, possibly already during their education (43). Besides unclarity about duties and responsibilities, the results of this thesis also showed that professionals feel a low sense of responsibility to solve problems in other domains. Therefore, agreements on allocation of tasks to clearly define roles and responsibilities are also needed. At last, professionals from occupational and curative health care in the Netherlands can already communicate through an existing online portal 'ZorgDomein'. Additional research should be used to examine whether this type of electronic communication systems actually help to improve interprofessional collaboration and cooperation, or that additional measures are needed.

Another solution for a more person-centered approach is by integrating occupational into curative health care. This was also mentioned several times in this thesis as a possible solution to improve collaboration between professionals from occupational and curative health care. Other countries also show that integrating care could be an effective way to enhance work participation. In Norway occupational care is operating independently of curative health care and regulated and funded separately. For the evidence-based IPS-method (i.e. Individual placement and support) to support people with mental illness to obtain a job and maintain employed, integrated care was an important aspect for its effectiveness (45). Moreover, integrating OHPs in curative health care could also be an effective way to reach workers in a vulnerable position, and may prevent the misconception of OHPs' partiality to the employer. To achieve integrated care, health care services in occupational, curative and/or social domain should make agreements on how to facilitate collaboration. To tackle financial and regulatory barriers for collaboration, shared shaving agreements could be implemented. In this type of agreements stakeholders from different domains make agreements on the type of care that is provided to a specific target group and about the costs, under the condition that the stakeholder that makes the investments is also the one who receives the benefits from the investment (46). Shared shavings were found to be potentially useful in health care and could improve integrated care (46-49). Therefore, the use of such agreements should be further explored to integrate occupational and curative health care. To achieve integrated care, we could also learn valuable lessons from other countries, such as the United Kingdom, which

already apply and initiate different forms of integrated care (50). However, several studies show that the potential benefits of integrated care may not always be evident, as integrated care also involves complex processes and may lead to new challenges (e.g. lack of coordination)(51). As such, there is a great need for more research on the effectiveness of integrated care, and on how to facilitate and implement this effectively in practice.

Grip on health intervention versus 'Mentorwijs' training

In this thesis, both Grip on Health and 'Mentorwijs' aimed to improve the health and sustainable employability, but the approach on how to reach that goal was different. The Grip on Health intervention, which was implemented among workers with a lower SEP, aimed to solve problems on multiple life domains and reduce health risks. Whereas 'Mentorwijs', which was implemented among workers with a work disability, aimed to improve the guidance from supervisors to prevent early exit from the workforce. Although, these interventions may complement one another: First, 'Mentorwijs' can be implemented to address work-related problems with the help from supervisors. In addition, supervisors can also play a role in the early identification of workers at risk for health problems, as was also described in chapter 5. Herein they can refer a worker preventively to an OHP. 'Grip on Health' can in addition to 'Mentorwijs' be implemented to address both work- and non-work-related problems. Hence, to enhance the sustainable employment of workers in a vulnerable position 'Mentorwijs' focuses on selective prevention targeted at workers who have a higher-than-average risk to drop out of the labor market, and how supervisors can reduce this risk. Whereas 'Grip on Health' focuses on indicated prevention targeted at workers who have a high risk to drop out of the labor market (i.e. may already have health complaints), and how OHPs can reduce this risk.

Grip on Health can be a successful method to support workers in a vulnerable position with solving problems on multiple life domains. However, the results of this thesis showed that the manner in which the Participatory Approach was implemented in Grip on Health does not work well in occupational health practice. In Grip on Health, the Participatory Approach was aligned with a broader perspective on health. However, by doing this the implementation of the intervention was perceived as complex by involved professionals because it resulted in solutions for different domains, asking (health) professionals from different domains to collaborate, which turned out to be difficult to organize. While the strength of the original Participatory Approach lays within small and practical solutions, that can easily be implemented as different stakeholders at the workplace reached consensus on solutions (52). Therefore, to adequately support workers in a vulnerable position with solving problems on multiple life domains occupational and curative health care should focus more on improving

interprofessional collaboration, either by including the topic of interprofessional collaboration in the education of professionals or by making agreements on how to facilitate collaboration.

‘Mentorwijijs’ is an important intervention, as supervisors need to be trained on how to guide workers at the workplace to enhance the sustainable employability and to ensure a safe and supportive work environment for workers in a vulnerable position. For this, organizations need organizational policies in which supervisors are enabled to follow this kind of trainings, and to ensure supervisors can apply what they have learned in trainings. Based on the results of this thesis we can also recommend some additions to ‘Mentorwijijs’. For instance, an important topic is to inform supervisors about the importance of sustainable employability, and how to stimulate workers to make use of preventive support of OHPs and of preventive interventions. Another topic is to train supervisors on how and when they can put workers into contact with an OHP, how they can talk with workers about their sustainable employability, and how to deal with problems outside the workplace. This kind of topics can be addressed either by occupational health services, OHPs themselves, or municipalities.

Conclusions

Workers in a vulnerable position are more often facing problems on multiple life domains, and therefore have more difficulties to remain sustainably employed. This underlines the need for preventive support in the workplace from both OHPs and supervisors. Interventions at the workplace, such as Grip on Health or ‘Mentorwijijs’ can provide this type of support. However, OHPs and supervisors are part of a larger system of the labor market, and for OHPs and supervisors to adequately support workers they also need a supportive environment that enables them to provide this support. Moreover, this thesis also showed that workers in a vulnerable position need support that goes beyond the work environment. Hence, to improve the health and sustainable employability of workers in a vulnerable position a joint effort of stakeholders from different domains is needed.

References

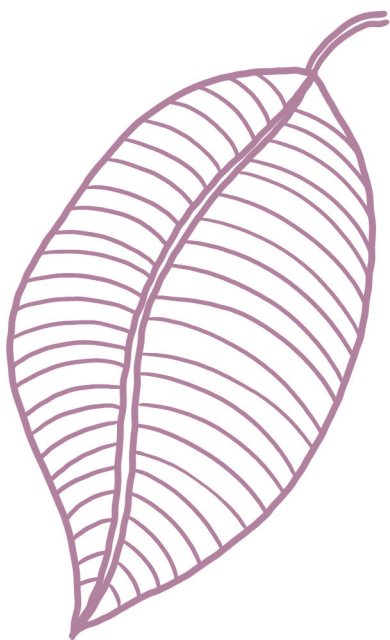
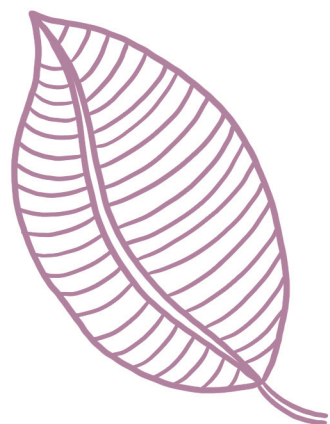
1. Uphoff EP, Pickett KE, Cabieses B, Small N, Wright J. A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities. *International Journal for Equity in Health*. 2013;12:54.
2. Dijkstra I, Horstman K. 'Known to be unhealthy': Exploring how social epidemiological research constructs the category of low socioeconomic status. *Social Science & Medicine*. 2021;285:114263.
3. Vornholt K, Villotti P, Muschalla B, Bauer J, Colella A, Zijlstra F, et al. Disability and employment – overview and highlights. *European Journal of Work and Organizational Psychology*. 2018;27(1):40-55.
4. Coupe N, Cotterill S, Peters S. Tailoring lifestyle interventions to low socio-economic populations: A qualitative study. *BMC Public Health*. 2018;18:967.
5. White M, Adams J, Heywood P. How and why do interventions that increase health overall widen inequalities within populations? *Social inequality and public health*. UK: Policy Press; 2009.
6. World Health Organization. Social Determinants of Health. [Available from: https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1].
7. Galobardes B, Shaw M, Lawlor DA, Lynch JW, Smith GD. Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health*. 2006;60(1):7-12.
8. Manstead AS. The psychology of social class: How socioeconomic status impacts thought, feelings, and behavior. *British Journal of Social Psychology*. 2018;57(2):267-91.
9. Eakin JM. Towards a 'Standpoint' Perspective: health and Safety in Small Workplaces from the Perspective of the Workers. *Policy and Practice in Health and Safety*. 2010;8(2):113-27.
10. Pharos. Bereiken en betrekken: de vier bouwstenen. 2020 [Available from: <https://www.pharos.nl/infosheets/bereiken-en-betrekken-bouwstenen/>].
11. Richardson A, Allen JA, Xiao H, Vallone D. Effects of race/ethnicity and socioeconomic status on health information-seeking, confidence, and trust. *Journal of Health Care for the Poor and Underserved*. 2012;23(4):1477-93.
12. De Brouwer CP, Verdonk P, van Amelsvoort LG, Jansen NW, Kant I, Widdershoven GA. Experiences of occupational physicians with the implementation of indicated prevention for long term sickness absence. *Work*. 2017;57(2):157-72.
13. Sponselee HC, Kroeze W, Robroek SJ, Renders CM, Steenhuis IH. Perceptions of employees with a low and medium level of education towards workplace health promotion programmes: a mixed-methods study. *BMC Public Health*. 2022;22:1617.
14. Schwarz T, Schmidt AE, Bobek J, Ladurner J. Barriers to accessing health care for people with chronic conditions: a qualitative interview study. *BMC Health Services Research*. 2022;22:1037.
15. Stuber JM, Middel CN, Mackenbach JD, Beulens JW, Lakerveld J. Successfully Recruiting Adults with a Low Socioeconomic Position into Community-Based Lifestyle Programs: A Qualitative Study on Expert Opinions. *International Journal of Environmental Research and Public Health*. 2020;17(8):2764.
16. Steel JS, Godderis L, Luyten J. Disclosure in Online vs. Face-to-Face Occupational Health Screenings: A Cross-Sectional Study in Belgian Hospital Employees. *International Journal of Environmental Research and Public Health*. 2021;18(4):1460.

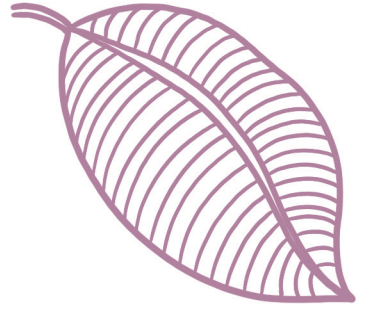
17. Durlak JA, DuPre EP. Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*. 2008;41(3-4):327-50.
18. Schelvis RM, Oude Hengel KM, Burdorf A, Blatter BM, Strijk JE, van der Beek AJ. Evaluation of occupational health interventions using a randomized controlled trial: challenges and alternative research designs. *Scandinavian Journal of Work, Environment & Health*. 2015;41(5):491-503.
19. Abma TA. Responsive evaluation: Its meaning and special contribution to health promotion. *Evaluation and Program Planning*. 2005;28(3):279-89.
20. Haynes A, Gilchrist H, Oliveira JS, Tiedemann A. Using Realist Evaluation to Understand Process Outcomes in a COVID-19-Impacted Yoga Intervention Trial: A Worked Example. *International Journal of Environmental Research and Public Health*. 2021;18(17):9065.
21. Van Heijster H, van Berkel J, Boot CR, Abma T, de Vet E. Responsive evaluation: an innovative evaluation methodology for workplace health promotion interventions. *BMJ Open*. 2022;12(12):e062320.
22. Roskam E. Using participatory action research methodology to improve worker health: causes, consequences, cures. *Unhealthy work*: Routledge; 2018.
23. Huber M, Knottnerus JA, Green L, van der Horst H, Jadad AR, Kromhout D, et al. How should we define health? *BMJ*. 2011;343:d4163.
24. Bovens M, Keizer A-G, Tiemeijer W. Weten is nog geen doen: een realistisch perspectief op redzaamheid. Wetenschappelijke Raad voor het Regeringsbeleid (WRR); 2017.
25. Hosper K, Loenen T. Leven met ongezonde stress: Aandacht voor chronische stress in de aanpak van gezondheidsverschillen. Utrecht: Pharos; 2021.
26. McKee M, Reeves A, Clair A, Stuckler D. Living on the edge: precariousness and why it matters for health. *Archives of Public Health*. 2017;75:13.
27. Checklist voor een basiscontract voor arbodienstverlening. OVAL; 2018 [Available from: https://www.oval.nl/cms/public/files/2018-08/1535526303_checklist-basiscontract-arbodienstverlening-versie-juli-2018.pdf?7cfbd1ffbd].
28. Autoriteit Persoonsgegevens. De zieke werknemer. Beleidsregels voor de verwerking van persoonsgegevens over de gezondheid van zieke werknemers. Autoriteit Persoonsgegevens; 2016.
29. Houtman I, Steenbeek R, van Zwieten M, Andriessen S. Verklaring stijging WIA instroom vanuit werkgeversperspectief: Een vignettenstudie. Leiden: TNO; 2013.
30. Euwals R, de Graaf-Zijl M, van Vuuren D. Flexibiliteit op de arbeidsmarkt. CPB Policy brief; 2016.
31. von Schrader S, Malzer V, Bruyère S. Perspectives on Disability Disclosure: The Importance of Employer Practices and Workplace Climate. *Employee Responsibilities and Rights Journal*. 2014;26:237-55.
32. Charmaz K. Disclosing illness and disability in the workplace. *Journal of International Education in Business*. 2010;3(1-2):6-19.
33. Phillips KG, Houtenville AJ, O'Neill J, Katz E. The effectiveness of employer practices to recruit, hire, and retain employees with disabilities: Supervisor perspectives. *Journal of Vocational Rehabilitation*. 2019;51(3):339-53.
34. Bosma AR, Boot CR, Snippen NC, Schaafsma FG, Anema JR. Supporting employees with chronic conditions to stay at work: perspectives of occupational health professionals and organizational representatives. *BMC Public Health*. 2021;21:592.

35. Los FS, de Boer AG, van der Molen HF, Hulshof CT. The Implementation of Workers' Health Surveillance by Occupational Physicians: A Survey Study. *Journal of Occupational and Environmental Medicine*. 2019;61(12):e497-e502.
36. Pees S, van Oostrom SH, Loef B, Schaafsma FG, Proper KI. Preventieve taken voor de bedrijfsarts. *TBV-Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde*. 2022;30(7-8):20-5.
37. Campmans JM, Smit DJ, van Oostrom SH, Engels JA, Proper KI. Barriers and facilitators to the implementation of workplace health promotion programs: Employers' perceptions. *Frontiers in Public Health*. 2022;10:1035064.
38. Pajic S, Buengeler C, den Hartog DN, Boer D. The moderating role of employee socioeconomic status in the relationship between leadership and well-being: A meta-analysis and representative survey. *Journal of Occupational Health Psychology*. 2021;26(6):537-65.
39. Kersten A, van Woerkom M, Geuskens GA, Blonk RW. Organisational Policies and Practices for the Inclusion of Vulnerable Workers: A Scoping Review of the Employer's Perspective. *Journal of Occupational Rehabilitation*. 2022;33(2):245-66.
40. Kuiper L, Bakker M, van der Klink J. The Role of Human Values and Relations in the Employment of People with Work-Relevant Disabilities. *Social Inclusion*. 2016;4(4):176.
41. Sociaal-Economische Raad. Een kwestie van gezond verstand: Breed preventiebeleid binnen arbeidsorganisaties. SER; 2009.
42. Olson JR, Benjamin PH, Azman AA, Kellogg MA, Pullmann MD, Suter JC, et al. Systematic Review and Meta-analysis: Effectiveness of Wraparound Care Coordination for Children and Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2021;60(11):1353-66.
43. Vossen E, van der Gulden JW, van Genabeek JA, Schaap R, Anema JR, Schaafsma FG. Process evaluation of the 'Grip on Health' intervention in general and occupational health practice. *BMC Health Services Research*. 2022;22(1):1459.
44. Vossen E, Schaafsma FG, van der Gulden JW, de Kock CA, Schaap R, Anema JR, et al. Nieuwe wegen naar arbocuratieve samenwerking: samen werken van praktijkondersteuners huis- en bedrijfsarts bij multiproblematiek. *TSG - Tijdschrift voor gezondheidswetenschappen*. 2022;100:138-45.
45. Sveinsdottir V, Bull HC, Evensen S, Reme SE, Knutzen T, Lystad JU. A short history of individual placement and support in Norway. *Psychiatric Rehabilitation Journal*. 2020;43(1):9-17.
46. Hayen AP, van den Berg MJ, Meijboom BR, Struijs JN, Westert Gert GP. Incorporating shared savings programs into primary care: from theory to practice. *BMC Health Services Research*. 2015;15:580.
47. Hayen A, van den Berg MJ, Struijs JN, Westert Gert GP. Dutch shared savings program targeted at primary care: Reduced expenditures in its first year. *Health Policy*. 2021;125(4):489-94.
48. Hultberg EL, Lönnroth K, Allebeck P. Evaluation of the effect of co-financing on collaboration between health care, social services and social insurance in Sweden. *International Journal of Integrated Care*. 2002;2:e09.
49. Powell BJ, McMillen JC, Proctor EK, Carpenter CR, Griffey RT, Bunger AC, et al. A compilation of strategies for implementing clinical innovations in health and mental health. *Medical Care Research and Review*. 2012;69(2):123-57.
50. Charles A, Wenzel L, Kershaw M, Ham C, Walsh N. A year of integrated care systems. Reviewing the journey so far. London: The King's Fund; 2018.

51. Davidson L, Scott J, Forster N. Patient experiences of integrated care within the United Kingdom: a systematic review. *International Journal of Care Coordination*. 2021;24(2):39-56.
52. Huysmans MA, Schaafsma FG, Viester L, Anema JR. *Multidisciplinaire Leidraad Participatieve Aanpak op de Werkplek - Hoofddocument en achtergronddocument*. VU Medisch Centrum: EMGO Instituut voor onderzoek naar Gezondheid en Zorg; 2016.

Appendix





Appendix

Summary
Samenvatting



Summary

Some workers face more difficulties to remain sustainably employed. This group consists for a large part of workers with a lower socioeconomic position (SEP) and of workers with a work disability. Both of these groups have a vulnerable position in the labor market and often face health problems in combination with problems on other life domains. Therefore, it is important to facilitate sustainable employment among workers in a vulnerable position, namely workers with a lower SEP and workers with a work disability. Research shows that individual skills, but also factors in the work and personal environment are important to remain sustainably employed. Regarding individual skills, workers in a vulnerable position may have a lower health literacy, which makes it more difficult to take responsibility for their health and well-being and to effectively deal with (health) problems. Workers in a vulnerable position also experience more unfavorable factors in both the work and personal environment, which lead to poorer health outcomes. Considering this, it is important to support workers in a vulnerable position to effectively deal with (health) problems that affect their sustainable employability.

To improve the health and sustainable employability of workers in a vulnerable position, occupational health professionals (OHPs) and supervisors can provide adequate support. However, OHPs spend most of their time providing advice to workers already on sick leave, instead of on preventive activities. OHPs can play a key role in the early detection of problems and in solving them both in- and outside the workplace. For this more knowledge is needed on how OHPs can fulfill a role in supporting workers with solving (health) problems. Moreover, support from supervisors, such as social support and a good relationship with the supervisor, also plays a key role in achieving sustainable employability. Therefore, more knowledge is needed on how supervisors can adequately guide workers in a vulnerable position at the workplace.

The overall aim of this thesis is to address the importance of improving the health and sustainable employability of workers in a vulnerable position, more specifically of workers with a lower SEP and workers with a work disability, and to investigate how workers with a lower SEP and with problems on multiple life domains can be adequately supported by OHPs, and how workers with a work disability can be adequately supported by supervisors at the workplace. The specific aims are:

1. To investigate the differences of exit from work on health between workers with a low SEP and workers with a high SEP.
2. To develop and evaluate a preventive intervention for OHPs to improve the health and sustainable employability of workers with a lower SEP and with

problems on multiple life domains, and to explore facilitators and barriers for implementation of these types of preventive interventions in occupational health practice.

3. To explore the needs of workers with a work disability with respect to the guidance of supervisors in relation to their sustainable employability, and to evaluate an intervention for supervisors to improve the sustainable employability of workers with a work disability.

Part I: The effects of exit from work among workers in a high and low socioeconomic position

Chapter 2 systematically reviewed the available evidence regarding the effects of exit from work on health in high and low socioeconomic groups. We found 22 studies, of which 13 studies reported more positive effects of exit from work on health among workers with a higher SEP compared to workers with a lower SEP. These effects were mainly reported after early/statutory retirement. This review showed that the effects of exit from work on health are different across socioeconomic groups and that the negative effects of exit from work on health are mainly present in lower socioeconomic groups. This group of workers may possess fewer resources to deal with the changes in one's life following exit from work, which could more rapidly result in health declines. These findings emphasize that there is a higher need to prevent exit from work among workers with a lower SEP, as they might experience more negative consequences of job loss.

Part II: The role of occupational health professionals in supporting lower socioeconomic position workers with problems on multiple life domains

In **chapter 3** an Intervention Mapping (IM) protocol was used to develop an intervention for OHPs to support lower SEP workers with solving problems on multiple life domains. First, a needs assessment was conducted combining literature with data from interviews and focus groups with lower SEP workers, employers and OHPs. Based on the needs assessment a program goal and performance and change objectives were defined, which resulted in methods and practical strategies. Based on the results of these steps, the actual intervention was developed, and an implementation and evaluation plan were developed. With this stepwise protocol the existing Participatory Approach, which mainly identifies and solves work-related problems, was adapted to include a broader perspective on health to solve problems on multiple life domains. This resulted in the Grip on Health intervention, with a training for OHPs to implement this intervention in practice. In this intervention OHPs guide and support lower SEP workers in identifying and solving problems on multiple life domains.

Chapter 4 aimed to evaluate the Grip on Health intervention in a pilot implementation study. A mixed methods process evaluation was performed among OHPs and lower SEP workers with problems on multiple life domains. Thirteen OHPs delivered the intervention to 27 workers. According to OHPs and lower SEP workers, OHPs were perceived essential to help workers identify and solve problems. Moreover, OHPs and lower SEP workers described that the intervention increased workers' health awareness and self-control and led to small and practical solutions. Grip on Health can be a successful method to support lower SEP workers with solving problems on multiple life domains. However, OHPs experienced several barriers on organizational level to implement the intervention in occupational health practice. Implementation was often affected by agreements on occupational health care between OHPs and employers or occupational health services and employers, and by difficulties with preventively reaching lower SEP workers with problems on multiple life domains.

In **chapter 5** a context analysis was conducted to further explore the impact of organizational and socio-political factors on the implementation of preventive interventions that aim to solve problems on multiple life domains among workers with a lower SEP. Semi-structured interviews were conducted with stakeholders at organizational level, occupational health service level, and at socio-political macro level. All stakeholders recognized the importance of addressing problems on multiple life domains among workers with a lower SEP. However, implementation of preventive interventions considering multiple life domains was perceived as challenging. No one feels fully responsible to solve all problems on multiple life domains, and there is a lack of collaboration between occupational and curative healthcare. Other barriers were that employers insufficiently invest in the prevention of health problems of their employees, and that it was difficult to identify workers at risk for health problems. Supervisors can play an important role in the early identification of workers at risk for health problems. However, supervisors discussing health-related problems may not always be desired, as they could take advantage of privacy sensitive information due to the unequal relationship between a supervisor and worker. These findings show that many different stakeholders both in- and outside occupational health practice need to be involved, collaborate, and need to be convinced of the added value to prevent problems on multiple life domains among workers with a lower SEP.

Part III: The role of supervisors in supporting workers with a work disability

In **chapter 6** the experiences of workers with a work disability regarding the guidance from their supervisors were explored, together with what kind of aspects they consider important to achieve sustainable employability. Supervisors of workers with a disability followed a training to improve the guidance of workers

with a work disability. This was called the 'Mentorwiji's' training. Workers were also asked whether they noticed any changes in the guidance they received due to the 'Mentorwiji's' training. Semi-structured (group) interviews were conducted among twenty-one workers with a work disability. Workers described they were very satisfied with the guidance of supervisors who followed the Mentorwiji's training, even though they hardly noticed any changes. Workers also mentioned they wanted more autonomy and had a desire for new opportunities and challenges in their work. Moreover, they described that feeling and being treated equal to colleagues and their supervisors is important for having positive relations at the workplace. Supervisor skills that are important for workers with a work disability are: communication skills, a supervisor that takes their opinion seriously and listens to them, a supervisor who can adequately deal with problems at the workplace, and who is available for help and asking questions and who gives appreciation.

In addition to the perspectives of workers with a work disability regarding the guidance at the workplace from their supervisor, **chapter 7** aimed to evaluate the effect of the 'Mentorwiji's' training on supervisors' behavioral and workers' employment outcomes. The results showed that the training significantly improved knowledge and self-efficacy of supervisors regarding the guidance of workers with a work disability. However, no effects were found on the supervisors' intention to adopt and applied behaviors regarding the guidance of workers with a work disability. Moreover, the results also showed that the sustainable employability of workers with a disability did not significantly improve on the long-term. These findings indicate that 'Mentorwiji's' is a promising training to improve the supervisor guidance of workers with a work disability, but needs further improvement. More research is needed to examine how to change supervisors' behaviors and how to sustain long-term effects on the employment of workers.

The general discussion, **chapter 8**, summarizes the findings of each chapter and reflects upon the two different target groups (i.e. workers with a lower SEP and workers with a work disability) that were studied in this thesis. Moreover, this chapter also reflects on the methodological considerations regarding indicators for workers with a lower SEP, recruitment, and participation of workers in a vulnerable position, and study designs to evaluate interventions in practice. Thereafter, the complexity of systems is considered for workers in a vulnerable position, OHPs and supervisors, followed by recommendations.

Workers in a vulnerable position find it more difficult to improve their health and sustainable employability due to various problems on multiple life domains, affecting their ability to adequately solve them. Therefore, these workers may need extra preventive support in the workplace from both OHPs and

supervisors. Interventions, such as Grip on Health or 'Mentorwijs', can provide this type of support, but to effectively implement these type of interventions barriers need to be overcome. OHPs need more time for preventive activities, and supervisors need to be trained in the importance of prevention and how to enable a work culture wherein workers feel supported by their organization. For this an organizational context is needed, in which OHPs and supervisors have the possibility to provide preventive support at the workplace. Moreover, to improve the health and sustainable employability of workers in a vulnerable position support is needed from outside the workplace. For this a person-centered approach is required wherein collaboration is facilitated between professionals from different domains.

Samenvatting

Sommige werkenden ervaren meer uitdagingen om duurzaam inzetbaar te blijven. Deze groep werkenden bestaat voor een groot deel uit werknemers met een lagere sociaaleconomische positie (SEP) en uit werknemers met een arbeidsbeperking. Beide groepen werknemers hebben een kwetsbare positie op de arbeidsmarkt en hebben vaker gezondheidsproblemen in combinatie met problemen op andere levensdomeinen. Daarom is het van belang om de duurzame inzetbaarheid van werkenden in een kwetsbare positie te bevorderen, namelijk die van werkenden met een lagere SEP en met een arbeidsbeperking. Onderzoek laat zien dat individuele vaardigheden, maar ook factoren in de werk- en privé omgeving belangrijk zijn om duurzaam inzetbaar te blijven. Als het gaat om individuele vaardigheden, hebben werkenden met een kwetsbare arbeidspositie minder gezondheidsvaardigheden. Hierdoor vindt deze groep werkenden het moeilijker om verantwoordelijkheid te nemen voor hun persoonlijke gezondheid en welzijn, en om op een goede manier (gezondheids)problemen aan te pakken. Werkenden in een kwetsbare arbeidspositie hebben ook slechtere omstandigheden in zowel de werk- als privé omgeving, die leiden tot gezondheidsverslechtering. Daarom is het van belang om werknemers in een kwetsbare arbeidspositie te ondersteunen om op een goede manier (gezondheids)problemen aan te pakken die hun duurzame inzetbaarheid op de arbeidsmarkt in de weg staan.

Om de gezondheid en duurzame inzetbaarheid van werknemers in een kwetsbare arbeidspositie te verbeteren, kunnen professionals op het gebied van arbeid en gezondheid (arboprofessionals) en leidinggevenden adequate ondersteuning bieden. Arboprofessionals besteden te veel tijd aan het geven van advies aan werknemers die al zijn ziekgemeld, in plaats van dat ze hun tijd aan preventie besteden. Ook kunnen arboprofessionals een belangrijke rol spelen bij het vroegtijdig opsporen en oplossen van (gezondheids)problemen, die zowel op als buiten het werk spelen. Hiervoor is meer kennis nodig over hoe arboprofessionals een rol kunnen vervullen bij het ondersteunen van werknemers bij het oplossen van (gezondheids)problemen. Daarnaast is ondersteuning van de leidinggevende, zoals sociale steun en een goede relatie met de leidinggevende, ook belangrijk voor duurzame inzetbaarheid. Daarom is er ook meer kennis nodig over hoe leidinggevenden werknemers in een kwetsbare positie op een goede manier kunnen begeleiden op de werkvloer.

Het doel van dit proefschrift is om de gezondheid en duurzame inzetbaarheid van werknemers in een kwetsbare arbeidspositie te verbeteren, en dan met name van werknemers met een lagere SEP en van werknemers met een arbeidsbeperking. Dit doen we door te onderzoeken hoe werknemers met een lagere SEP en met problemen op meerdere levensdomeinen op een goede manier

ondersteund kunnen worden door arboprofessionals, en hoe werknemers met een arbeidsbeperking op een goede manier ondersteund kunnen worden door leidinggevendenden op de werkvloer. De specifieke doelen zijn:

1. De verschillen in gezondheid onderzoeken tussen werknemers met een lage en werknemers met een hoge SEP wanneer zij stoppen met werken.
2. Een preventieve interventie voor arboprofessionals ontwikkelen en evalueren om de gezondheid en duurzame inzetbaarheid van werknemers met een lagere SEP en met problemen op meerdere levensdomeinen te verbeteren, en om bevorderende en belemmerende factoren te onderzoeken voor de implementatie van dit soort preventieve interventies in de bedrijfsgezondheidszorg.
3. De behoeften van werkenden met een arbeidsbeperking onderzoeken met betrekking tot de begeleiding van leidinggevendenden in relatie tot hun duurzame inzetbaarheid, en een interventie voor leidinggevendenden evalueren met als doel om de duurzame inzetbaarheid van werkenden met een arbeidsbeperking te verbeteren.

Deel I: De gezondheidseffecten van stoppen met werken bij werknemers in een hoge en lage sociaaleconomische positie

In **hoofdstuk 2** is een systematisch overzicht gegeven van de beschikbare literatuur over de effecten van stoppen met werken op de gezondheid van hoge en lage sociaaleconomische groepen. We hebben 22 studies gevonden, waarvan 13 studies meer positieve gezondheidseffecten vonden bij werknemers in een hogere SEP nadat zij zijn gestopt met werken, ten opzichte van werknemers in een lagere SEP. Deze effecten werden voornamelijk gevonden na (vervroegd) pensioen. Dit overzicht toont aan dat de effecten van stoppen met werken op gezondheid verschillen tussen sociaaleconomische groepen en dat de negatieve effecten op gezondheid vooral aanwezig zijn in lagere sociaaleconomische groepen. Deze groep werknemers heeft mogelijk minder (hulp)middelen om met veranderingen om te gaan nadat zij stoppen met werken, wat kan leiden tot een slechtere gezondheid. Deze bevindingen benadrukken dat het voor werknemers in een lagere SEP belangrijker is om te voorkomen dat zij vroegtijdig stoppen met werken, omdat deze groep mogelijk meer negatieve gezondheidseffecten ervaart als ze stoppen met werken.

Deel II: De rol van arboprofessionals bij het ondersteunen van werknemers met een lagere SEP en met problemen op meerdere levensdomeinen

In **hoofdstuk 3** is een Intervention Mapping (IM) protocol gebruikt om een interventie voor arboprofessionals te ontwikkelen zodat zij werknemers met een

lagere SEP kunnen ondersteunen bij het oplossen van problemen op meerdere levensdomeinen. Allereerst is een probleemanalyse uitgevoerd waarbij data is verzameld uit de literatuur en interviews en focusgroepen zijn uitgevoerd met werknemers met een lagere SEP, werkgevers en arboprofessionals. Op basis van de probleemanalyse is het doel van de interventie vastgesteld, en zijn doelstellingen voor gedrag gedefinieerd. Dit resulteerde in methoden en praktische toepassingen voor de interventie. Op basis van deze stappen is een interventie ontwikkeld en een implementatie- en evaluatieplan opgesteld. Met dit stapsgewijze protocol is de bestaande Participatieve Aanpak, die voornamelijk werk-gerelateerde problemen identificeert en oplost, aangepast om aan te sluiten op een breder perspectief op gezondheid om problemen op meerdere levensdomeinen op te lossen. Dit resulteerde in de Grip op Gezondheid interventie, met een training voor arboprofessionals die deze interventie in de praktijk toepassen. In de Grip op Gezondheid interventie begeleiden en ondersteunen arboprofessionals werknemers met een lagere SEP bij het identificeren en oplossen van problemen op meerdere levensdomeinen.

Hoofdstuk 4 had tot doel om de Grip op Gezondheid interventie te evalueren in een pilot-implementatiestudie. Er is een mixed methods procesevaluatie uitgevoerd onder arboprofessionals en onder werknemers met een lagere SEP met problemen op meerdere levensdomeinen. Dertien arboprofessionals leverden de interventie aan 27 werknemers. Volgens arboprofessionals en werknemers waren arboprofessionals essentieel om werknemers te helpen met het identificeren en oplossen van problemen. Ook beschreven arboprofessionals en werknemers dat de interventie het bewustzijn over gezondheid en de eigen regie van werknemers verhoogde en leidde tot kleine en praktische oplossingen. Grip op Gezondheid kan een succesvolle methode zijn om werknemers met een lagere SEP te ondersteunen bij het oplossen van problemen op meerdere levensdomeinen. Maar, arboprofessionals ervoeren verschillende belemmeringen op organisatorisch niveau om de interventie te implementeren in de bedrijfsgezondheidszorg. De implementatie van de interventie werd vaak belemmerd door afspraken over de arbodienstverlening tussen arboprofessionals en werkgevers of tussen arbodiensten en werkgevers. Ook problemen met het preventief bereiken van werknemers met een lagere SEP en met problemen op meerdere levensdomeinen belemmerde de implementatie van de interventie.

In **hoofdstuk 5** is een contextanalyse uitgevoerd om de invloed van organisatorische en sociaal-politieke factoren te onderzoeken op de implementatie van preventieve interventies die gericht zijn op het oplossen van problemen op meerdere levensdomeinen bij werknemers met een lagere SEP. Hiervoor zijn semigestructureerde interviews uitgevoerd met stakeholders op organisatieniveau, op het niveau van de bedrijfsgezondheidszorg en op

sociaal-politiek macroniveau. Alle stakeholders erkenden het belang van het aanpakken van problemen op meerdere levensdomeinen bij werknemers met een lagere SEP. Maar, de implementatie van preventieve interventies die gericht zijn op meerdere levensdomeinen werd als een uitdaging gezien. Niemand voelt zich volledig verantwoordelijk om problemen op meerdere levensdomeinen op te lossen. Ook is er een gebrek aan samenwerking tussen de bedrijfs- en de curatieve gezondheidszorg. Andere belemmeringen voor de implementatie van de interventie zijn dat werkgevers onvoldoende investeren in het voorkomen van gezondheidsproblemen bij hun werknemers, en dat het lastig is om werknemers te identificeren die een verhoogd risico hebben op het krijgen van gezondheidsproblemen. Leidinggevenden kunnen een belangrijke rol spelen bij het vroegtijdig identificeren van werknemers met een verhoogd risico op gezondheidsproblemen. Maar, het is niet altijd wenselijk dat leidinggevenden gezondheidsgelateerde problemen bespreken met werknemers, omdat ze vanwege de ongelijke relatie tussen leidinggevenden en werknemers misbruik kunnen maken van privacygevoelige informatie. Deze resultaten laten zien dat diverse stakeholders, zowel binnen als buiten de bedrijfsgezondheidszorg, betrokken moeten worden, moeten samenwerken en overtuigd moeten worden van de toegevoegde waarde om problemen op meerdere levensdomeinen bij werknemers met een lagere SEP te voorkomen.

Deel III: De rol van leidinggevenden bij het ondersteunen van werknemers met een arbeidsbeperking

In **hoofdstuk 6** zijn de ervaringen van werkenden met een arbeidsbeperking over de begeleiding van hun leidinggevenden in kaart gebracht, en welke aspecten zij belangrijk vinden om duurzaam inzetbaar te blijven. Leidinggevenden van werknemers met een arbeidsbeperking volgden een training om de begeleiding van werknemers met een arbeidsbeperking te verbeteren. Deze training werd 'Mentorwijs' genoemd. Ook is aan werknemers gevraagd of ze veranderingen hebben opgemerkt in de begeleiding van leidinggevenden die deze training gevolgd hebben. Bij 21 werknemers met een arbeidsbeperking zijn semigestructureerde (groeps)interviews uitgevoerd. Werknemers gaven aan zeer tevreden te zijn over de begeleiding van leidinggevenden die de Mentorwijs training hebben gevolgd, hoewel ze nauwelijks veranderingen opmerkten in de begeleiding nadat hun leidinggevende de training had afgerond. Werknemers vertelden ook dat ze meer behoefte hadden aan autonomie en nieuwe kansen en uitdagingen in hun werk. Ook beschreven ze dat voor het hebben van goede relaties op het werk, het belangrijk is dat zij (het gevoel hebben dat ze) gelijkwaardig behandeld worden ten opzichte van andere collega's en leidinggevenden. Vaardigheden voor leidinggevenden die van belang zijn voor de begeleiding van werknemers met een arbeidsbeperking zijn: communicatieve vaardigheden, een leidinggevende die hun

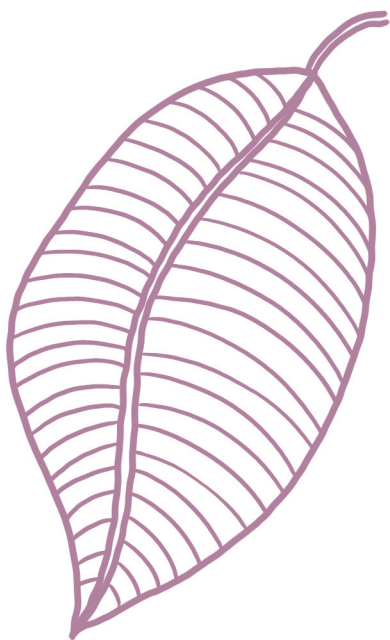
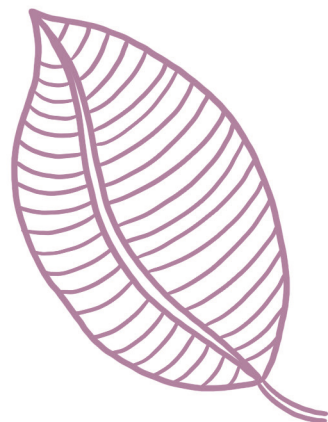
mening serieus neemt en naar hen luistert, een leidinggevende die adequaat kan omgaan met problemen op de werkvloer en een leidinggevende die beschikbaar is voor hulp, vragen stelt en waardering uitspreekt.

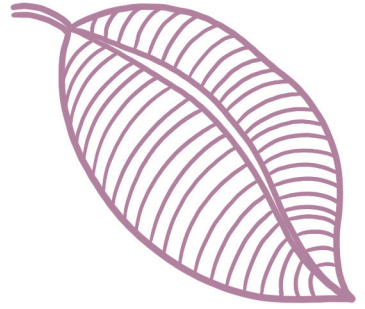
Naast de ervaringen van werknemers met een arbeidsbeperking over de begeleiding op de werkvloer van hun leidinggevende, evalueert **hoofdstuk 7** de effectiviteit van 'Mentorwijs' op het gedrag van leidinggevend en op de arbeidsparticipatie van werknemers. De resultaten laten zien dat kennis en het vertrouwen in eigen kunnen van leidinggevend over de begeleiding van werknemers met een arbeidsbeperking significant verbeterde door de training. Er werden geen effecten gevonden op intentie tot en toegepaste gedragingen voor de begeleiding van werknemers met een arbeidsbeperking. Ook de duurzame inzetbaarheid van werkenden met een arbeidsbeperking verbeterde niet significant op de lange termijn. Deze bevindingen laten zien dat 'Mentorwijs' een veelbelovende training is voor leidinggevend om de begeleiding van werknemers met een arbeidsbeperking te verbeteren, maar er ook ruimte is voor verdere verbetering van de training. Meer onderzoek is nodig om te achterhalen hoe we het gedrag van leidinggevend kunnen veranderen en hoe we langetermijneffecten op de arbeidsparticipatie van werknemers kunnen behouden.

In **hoofdstuk 8**, de discussie, zijn de bevindingen uit elk hoofdstuk samengevat en is gereflecteerd op de twee verschillende doelgroepen (werknemers met een lagere SEP en werknemers met een arbeidsbeperking) die in dit proefschrift zijn onderzocht. Ook bevat dit hoofdstuk een reflectie op de volgende methodologische overwegingen; indicatoren voor werknemers met een lagere SEP, de werving en participatie van werkenden in een kwetsbare positie, en onderzoekdesigns om interventies in de praktijk te evalueren. Daarna wordt de complexiteit van systemen voor werknemers in een kwetsbare positie, arboprofessionals en leidinggevend besproken. Dit hoofdstuk sluit af met aanbevelingen.

Werknemers in een kwetsbare arbeidspositie hebben meer moeite om hun gezondheid en duurzame inzetbaarheid te verbeteren. Dit komt door verschillende problemen die op meerdere levensdomeinen spelen, wat het moeilijk maakt om deze problemen op te lossen. Daarom heeft deze groep werknemers meer preventieve ondersteuning op de werkplek nodig, van zowel arboprofessionals als leidinggevend. Interventies, zoals Grip op Gezondheid of Mentorwijs, kunnen die ondersteuning bieden. Om dit soort interventies effectief uit te voeren, moeten factoren die de implementatie belemmeren worden weggenomen. Arboprofessionals hebben meer tijd nodig voor preventieve activiteiten en leidinggevend moeten getraind worden in het belang van preventie en hoe ze een werkkultuur kunnen creëren waarin werknemers zich gesteund voelen door hun organisatie. Hiervoor is een werkomgeving nodig waarin arboprofessionals

en leidinggevenden de mogelijkheid hebben om preventieve ondersteuning op de werkvloer te bieden. Om de gezondheid en duurzame inzetbaarheid van werknemers in een kwetsbare positie te verbeteren, is ook ondersteuning van buiten het werk nodig. Dit vraagt om een persoonsgerichte aanpak waarbij samenwerking wordt gefaciliteerd tussen professionals uit verschillende domeinen.





Appendix

About the author
List of publications
Portfolio



About the author

Rosanne was born in Hoorn on December 23, 1993. She completed her secondary education at Oscar Romero in Hoorn and obtained her VWO diploma in 2012. Then she started the bachelor's program Health Sciences at the VU University of Amsterdam, graduating and earning her bachelor's degree in 2015. Soon after, she began the two-year master's program Management, Policy Analysis and Entrepreneurship in the Health and Life Sciences. She received her master's degree in 2017.

In 2018, Rosanne started her PhD journey at the Department of Public and Occupational health at Amsterdam UMC. During her PhD, she presented her findings at international conferences and also contributed to various other research projects in the field of work and health. In addition to her research activities, she was involved in teaching and mentoring Health Sciences and Medical students. She also completed several courses in qualitative and quantitative research methods.

Rosanne continued her career as a researcher at the research agency Regioplan, where she conducts research in the field of work, participation, and social security.

List of publications

Publications in this thesis

Schaap R, Coenen P, Zwinkels W, de Wolff M, Hazelzet A, Anema, J. Training for Supervisors to Improve Sustainable Employment of Employees with a work Disability: A Longitudinal Effect and Process Evaluation from an Intervention Study with Matched Controls. *Journal of Occupational Rehabilitation*. 2023;1-17. DOI: <https://doi.org/10.1007/s10926-023-10118-2>.

Schaap R, Schaafsma F, Huysmans M, Vossen E, Boot C, Anema, J. The Grip on Health Intervention to Prevent Health Problems Among Workers With a Lower Socioeconomic Position: A Pilot Implementation Study. *Journal of Occupational and Environmental Medicine*. 2023;65(6):e363-e371. DOI: 10.1097/JOM.0000000000002826.

Schaap R, Schaafsma FG, Huysmans MA, Bosma AR, Boot CR, Anema JR. A Context Analysis with Stakeholders' Views for Future Implementation of Interventions to Prevent Health Problems Among Employees with a Lower Socioeconomic Position. *Journal of Occupational Rehabilitation*. 2022;32(3):438-451. DOI: <https://doi.org/10.1007/s10926-021-10010-x>.

Schaap R, Stevels VA, de Wolff MS, Hazelzet AM, Anema JR, Coenen P. "I noticed that when I have a good supervisor, it can make a Lot of difference." A Qualitative Study on Guidance of Employees with a Work Disability to Improve Sustainable Employability. *Journal of Occupational Rehabilitation*. 2022;33(1):201-211. DOI: <https://doi.org/10.1007/s10926-022-10063-6>.

Schaap R, Schaafsma FG, Bosma AR, Huysmans MA, Boot CR, Anema JR. Improving the health of workers with a low socioeconomic position: Intervention Mapping as a useful method for adaptation of the Participatory Approach. *BMC Public Health*. 2020;20(1):961.

Schaap R, de Wind A, Coenen P, Proper K, Boot C. The effects of exit from work on health across different socioeconomic groups: A systematic literature review. *Social Science and Medicine*. 2018; 198: 36-45. DOI: <https://doi.org/10.1016/j.socscimed.2017.12.015>.

Publications not included in this thesis

Vossen E, van der Gulden JW, van Genabeek JA, Schaap R, Anema JR, Schaafsma FG. Process evaluation of the 'Grip on Health' intervention in general and occupational health practice. *BMC Health Services Research*. 2022;22(1):1459. DOI: <https://doi.org/10.1186/s12913-022-08801-w>.

Bosma AR, Boot, CRL, Schaap R, Schaafsma FG, Anema JR. Participatory Approach to Create a Supportive Work Environment for Employees With Chronic Conditions: A Pilot Implementation Study. *Journal of Occupational and Environmental Medicine*. 2022;64(8):665-674. DOI: 10.1097/JOM.0000000000002557.

Benning FE, van Oostrom SH, van Nassau F, Schaap R, Anema JR, Proper KI. The Implementation of Preventive Health Measures in Small and Medium-Sized Enterprises—A Combined Quantitative/Qualitative Study of Its Determinants from the Perspective of Enterprise Representatives. *International Journal of Environmental Research and Public Health*. 2022;19(7):3904. DOI: <https://doi.org/10.3390/ijerph19073904>.

Schaap R. Socio-economic differences in health impacts of exit from work. *Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde*. 2018;26:357. DOI: <https://doi.org/10.1007/s12498-018-0237-2>.

Schaap R, Bessems K, Otten, R, Kremers S, van Nassau F. Measuring implementation fidelity of school-based obesity prevention programmes: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*. 2018;15(1):1-14. DOI: <https://doi.org/10.1186/s12966-018-0709-x>.

Dutch publications

Vossen E, Schaafsma FG, van der Gulden JW, de Kock CA, Schaap R, Anema JR, et al. Nieuwe wegen naar arbocuratieve samenwerking: samen werken van praktijkondersteuners huis- en bedrijfsarts bij multiproblematiek. *TSG - Tijdschrift voor gezondheidswetenschappen*. 2022;100:138-45. DOI: <https://doi.org/10.1007/s12508-022-00374-7>.

Factsheet: Mentorwijs. TNO Publications. Thema arbeid en sociale zekerheid. Leiden: TNO; 2022. [Available from: <https://publications.tno.nl/publication/34640412/H9t6rW/TNO-2022-mentorwijs.pdf>].

Interview in: Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde. E-learning over werkenden met lagere sociaaleconomische positie. TBV-online. 2022. [Available from: <https://www.tbv-online.nl/e-learning-over-werkenden-met-lagere-sociaaleconomische-positie/>].

Schaap R, Schaafsma F, Huysmans M, Boot C, Anema H. Leidraad voor het implementeren van een Participatieve Aanpak voor werknemers met multiproblematiek: Grip op Gezondheid. 2021. [Available from: <https://nvab-online.nl/content/participatieve-aanpak-op-de-werkplek/>].

Schaap R. Hoe wetenschap en praktijk van arbeid en gezondheid elkaar vinden en versterken. Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde. 2020;28(4):17. DOI: <https://doi.org/10.1007/s12498-020-0657-7>.

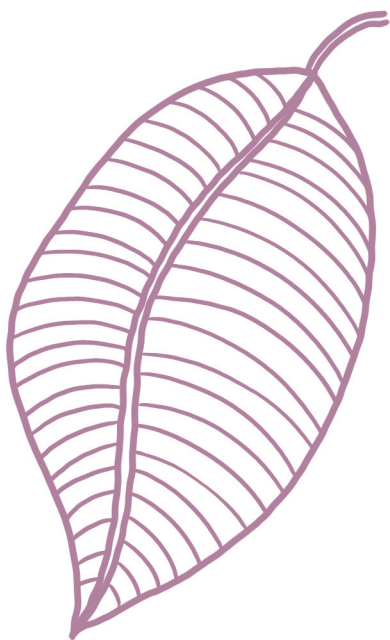
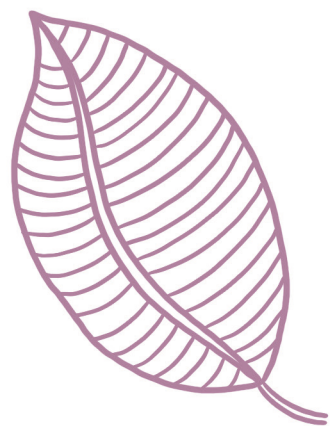
Schaap R, de Wind A, Boot C. Pensioen: kans of bedreiging voor sociaaleconomische gezondheidsverschillen? Gerōn. 2019;21(2).

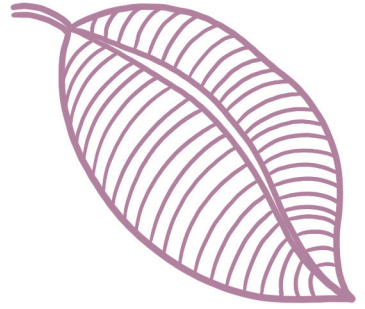
Portfolio

PhD training program Amsterdam Public Health research institute (APH)

Name: Rosanne Schaap

Name	Year	EC
Courses		
Social Epidemiology	2018	0.70
Research Integrity Course	2018	2.00
Qualitative research: in-depth and applying	2019	2.00
Regression techniques	2019	5.00
Longitudinal data-analysis	2020	3.00
Qualitative analysis	2020	0.40
Presenting with theater skills	2021	0.50
Conferences		
Poster presentation Work Disability Prevention and Integration conference	2019	2.00
Poster presentation Bedrijfsgeneeskundige dagen	2019	1.00
Poster presentation European Implementation Conference	2021	2.00
Poster presentation ICOH conference	2022	2.00
Poster presentation Bedrijfsgeneeskundige dagen	2022	1.00
Other academic activities		
Science Exchange Day	2018	0.21
Workshop basis didactic for workgroup leaders	2018	0.10
Care-Days	2019	1.00
Workshop inspirational pitching	2020	0.10
Workshop Transferrable skills	2020	0.10
Updating policy documents APH quality handbook	2020	0.90
Member junior council APH	2022	1.00
Journal club department of Societal Participation and Health	2022	1.00
Teaching/Student supervision		
Supervising internship academic training bachelor Medicine	2019	1.00
Supervising intern bachelor Health and Life Sciences	2021	1.00
Workgroup leader Health@Work bachelor Health Sciences	2021	2.00
Total number of ECTS credits		31.01





Appendix

Dankwoord



Dankwoord

Na een periode van 5,5 jaar sluit ik dit PhD hoofdstuk dan toch echt af. Ik begon dit avontuur als junior onderzoeker, net nadat ik was afgestudeerd. Destijds was het nog onzeker of ik zou kunnen promoveren. Maar, dankzij een promotieteam dat in mij bleef geloven en alle ondersteuning en hulp van de mensen om mij heen, is het uiteindelijk toch gelukt. Ik ben iedereen enorm dankbaar voor de steun, gezelligheid en liefde die ik heb mogen ontvangen tijdens mijn promotietraject.

Allereerst wil ik mijn promotieteam bedanken: Frederieke, Maaïke, Cécile en Han. *Frederieke*, ik wil je ontzettend bedanken voor alle steun en begeleiding die je mij de afgelopen jaren hebt gegeven. Kort na de start van mijn promotietraject werd jij mijn begeleider. Al snel merkte ik dat jij een onmisbare kracht in mijn team was vanwege jouw ervaring als bedrijfsarts en (praktijk)kennis over bedrijfsgezondheidszorg. Ik weet nog goed dat jij mij adviseerde om eerst maar eens te gaan praten met een bedrijfsarts, arbeidsdeskundige en arboverpleegkundige, om wat meer te weten te komen over de 'praktijk'. Ook vond ik het altijd enorm leerzaam en gezellig om samen met jou trainingen voor (arbo)professionals te verzorgen. Je was een fantastische begeleider, waarbij ik je humor en directheid altijd enorm heb gewaardeerd.

Maaïke, jouw ruime kennis en ervaring met onderzoek, kritische blik en oog voor detail hebben mijn proefschrift echt verrijkt. Je enthousiasme en gedrevenheid waren voor mij een enorme stimulans om het onderzoek verder te brengen. Ik waardeer het enorm dat je altijd in mij bleef geloven, en ook echt de tijd en moeite nam om mij te ondersteunen waardoor ik mijzelf verder kon ontwikkelen. Ik ben ontzettend blij dat ik door jou ook mijn huidige baan heb gevonden en dat we onze samenwerking mogen voortzetten.

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herinner ik me vooral de rijke kennis over bedrijfs- en verzekeringsgeneeskunde en jouw scherpe feedback op mijn stukken. Meestal bracht je een belangrijk punt in waar wij in het team nog niet over nagedacht hadden. Soms bracht dit wel eens extra uitdagingen met zich mee, maar tegelijkertijd zorgde dit altijd voor een verbetering van het onderzoek.

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Ook wil ik nog een aantal coauteurs bedanken voor de fijne samenwerking. Astrid de Wind, Vera Stevels, Astrid Bosma, Wim Zwinkels, Emma Vossen, en Femke van Nassau. Allemaal zeer veel dank voor het meedenken, analyseren en meeschrijven aan artikelen.

Ik ben alle meewerkende organisaties, professionals en deelnemers van mijn onderzoek ook enorm dankbaar. Dit proefschrift zou zonder jullie nooit tot stand zijn gekomen!

Alle lieve collega's van het Amsterdam UMC wil ik bedanken voor de fijne tijd die ik er heb gehad. Allen bedankt voor de gezelligheid, (goede) koffie, werkborrels, praktische tips, peptalks, en het aanhoren van frustraties. Zonder jullie had ik dit promotietraject niet kunnen afronden. Ik heb een groot deel van mijn PhD tijd

in kamer A331 doorgebracht. *Lidewij*, jij zat tegenover mij en ik kon altijd enorm fijn met je kletsen, lachen, en 'veel' koffiedrinken. Ook mijn lieve kamergenootjes *Carlien*, *Esmee*, *Amber* en *Mara* stonden altijd voor mij klaar en zorgden voor veel gezelligheid en goede gesprekken. Ik waardeer het enorm dat we elkaar nog geregeld zien met lunches, borrels en etentjes. Ook het nachtje weg bij de CaReDays in Eindhoven zal ik niet meer vergeten. Gelukkig hebben we de foto's nog;). *Mandy*, wij zijn samen aan dit avontuur begonnen. Wat konden we toch veel stressen over de kleinste dingen, maar gelukkig hadden we altijd elkaar nog. Ik ben ook ontzettend trots op het leuke afdelingsuitje dat wij georganiseerd hebben. *Astrid*, ik vond het altijd het erg fijn om met jou samen te werken, en onze PhD-perikelen met elkaar te delen. *Kristel*, *Christa*, *Stef*, en *Sigrid* ook jullie wil ik bedanken.

De onderzoeksassistenten, en in het bijzonder *Mark* en *Marianne*, bedankt voor al jullie ondersteuning bij mijn onderzoek.

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dat je 'nooit een PhD wilde doen' was het toch wel erg gezellig dat we beide een PhD zijn gaan doen op dezelfde afdeling, en dat ook onze werkkamers uiteindelijk naast elkaar zaten. Jij in de borrelcommissie en ik als chef 'werving', wij zijn een goed team samen (blijkt ook bij het uit elkaar halen van kasten). Wat ben ik blij met jou als vriendin!

Natuurlijk zijn er nog mijn lieve vrienden die indirect enorm veel steun en liefde hebben gegeven. Zonder jullie is het leven toch iets minder leuk.

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De bier en breiclub, tijdens de laatste loodjes van mijn proefschrift waren de breiavondjes altijd een fijne afleiding.

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