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Process evaluation of a problem solving intervention to prevent recurrent sickness absence in workers with common mental disorders

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ABSTRACT

Common mental disorders (CMDs) are a major cause of sickness absence. Twenty to 30% of the workers who return to work after sickness absence due to CMDs experience recurrent sickness absence. We developed the Stimulating Healthy participation And Relapse Prevention (SHARP)-at work intervention, a problem solving intervention delivered by occupational physicians (OPs), to prevent recurrent sickness absence in this worker population in The Netherlands. A process evaluation was conducted alongside a cluster-randomised controlled trial to (1) evaluate whether the SHARP-at work intervention was implemented according to the protocol and differed from treatment in the control group, and (2) to investigate the relationship between the key elements of the intervention and the effect outcome (i.e. recurrent sickness absence). We collected process data for both the intervention and control group on recruitment, reach, dose delivered, dose received, fidelity, context and satisfaction. Data on recurrent sickness absence was collected through the registry system of the collaborating occupational health service. The study was performed in the Netherlands, and between 2010 and 2012, 154 OPs and 158 participants participated. Compared to the control group, participants in the intervention group more frequently had two or more consultations with the OP (odds ratio [OR] = 3.2, 95% confidence interval [CI] = 1.2–8.8) and completed more assignments (OR = 33.8, 95% CI = 10.4–109.5) as recommended in the intervention protocol. OPs and participants were satisfied with the intervention and rated it as applicable. Several individual intervention components were linked to the effect outcome. The process evaluation showed that the SHARP-at work intervention was conducted according to the protocol for the majority of the participants and well-received by OPs and participants. Furthermore, the intervention differed from treatment in the control group. Overall, the results provide support for implementing the intervention in practice.

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Introduction

In many Western countries, common mental disorders (CMDs), such as depression, anxiety and adjustment disorders, are highly prevalent in the labour force (Kessler & Frank, 1997; Sanderson & Andrews, 2006; Wittchen & Jacobi, 2005). CMDs do not only cause sickness absence and work disability (Bültmann, Christensen, Burr, Lund, & Rugulies, 2008; Henderson, Glozier, & Elliott, 2005; Sanderson & Andrews, 2006; Stansfeld & Candy, 2006), but are also related to on-the-job productivity loss because of reduced work functioning (Lee, 2010; Lerner et al., 2004; Lim, Sanderson, & Andrews, 2000). To reduce the individual and societal burden of sickness absence due to CMDs, interventions have been developed to facilitate return to work (RTW) (Blonk, Brenninkmeijer, Lagerveld, & Houtman, 2006; Furlan et al., 2011; Pomaki, Franche, Murray, Khushrushahi, & Lampinen, 2011; van der Klink, Blonk, Schene, &

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van Dijk, 2003). The primary goal of these interventions is to get the worker back to work, though research has shown that 20%–30% of the workers who return to work after sickness absence due to CMDs experience recurrent sickness absence (Koopmans et al., 2011; Virtanen et al., 2011). As comparison, for musculoskeletal disorders studies have shown that recurrence of sickness absence ranges between 18 and 38% (Bültmann et al., 2007; Gross & Battie, 2005).

To prevent recurrent sickness absence in workers who have been on sickness absence due to CMDs, the "Stimulating Healthy participation And Relapse Prevention (SHARP)-at work" intervention was developed (Arends, van der Klink, & Bültmann, 2010). The intervention is provided by occupational physicians (OPs or simply physicians) and aims to guide workers through a problem solving process. Furthermore, the supervisor is involved to enable practical solutions that can be implemented. The intervention was evaluated in a cluster-randomised controlled trial (cluster-RCT), and the effect evaluation showed that the intervention group had a significantly lower incidence of recurrent sickness absence compared to the control group. No effects were found regarding the reduction of mental health complaints (Arends, van der Klink, van Rhenen, de Boer, & Bültmann, 2013).

Although an effect evaluation is often the primary goal of intervention research, it does not provide insight into why and how an intervention was successful or failed. This impedes the generalisability and implementation of intervention results (Egan, Bambra, Petticrew, & Whitehead, 2009; Murta, Sanderson, & Oldenburg, 2007; Saunders, Evans, & Joshi, 2005). A process evaluation can be conducted to collect data about how interventions were planned and implemented. A properly conducted process evaluation can help explain the success or failure of finding a relationship between the intervention and the outcome(s) of interest. Kristensen (2005) emphasised the importance of distinguishing between theory and program failure (Kristensen, 2005). When an intervention is delivered and received as planned but no effect of the intervention is found, theory failure is plausible. However, when an intervention is poorly executed (i.e. not delivered or received according to the protocol), this indicates program failure and no conclusions should be drawn about the effectiveness of the intervention (Egan et al., 2009; Kristensen, 2005). The process evaluation framework of Steckler and Linnan (2002) can be related to the theoretical model of Kristensen because in this framework the different elements are specified that need to be evaluated to understand whether program failure occurred. Steckler and Linnan summarised the elements of a process evaluation into seven components: fidelity (quality), recruitment, reach (participation rate), dose delivered (completeness), dose received (exposure), implementation and context (Steckler & Linnan, 2002).

Previous research on process evaluations of occupational intervention studies has been fragmented and unstructured (Bambra, Egan, Thomas, Petticrew, & Whitehead, 2007; Murta et al., 2007). Especially, the linkage of process variables (e.g. reach, dose received) to effect outcomes is often missing. Murta et al. (2007) performed a systematic review of process evaluations conducted for occupational stress management programs and found that only 46% of the 84 included studies made an explicit link between process evaluation variables and the outcome (Murta et al., 2007).

This study reports on a theoretically founded and structured process evaluation of the SHARP-at work intervention. The framework of Steckler and Linnan was used to develop, plan and guide the process evaluation (Murta et al., 2007; Saunders et al., 2005; Steckler & Linnan, 2002). The aims of the study were: 1) to evaluate whether the SHARP-at work intervention was conducted according to the protocol and differed from care as usual, and 2) to investigate the relationship between the key elements of the intervention and the effect outcome of the trial.

Methods

Design

The process evaluation was part of a cluster-RCT evaluating the effect of the SHARP-at work intervention on the prevention of recurrent sickness absence in workers who had returned to work after sickness absence due to CMDs. The trial was conducted in the Netherlands. Occupational physicians were randomised into intervention and control groups. Workers were recruited by the physicians and their allocation followed the allocation of their physician. For more detailed information on the design of the cluster-RCT, see (Arends et al., 2010).

Participants

253 occupational physicians were recruited from one of the largest occupational health services in the Netherlands. All physicians were eligible except those with an upcoming retirement, resignation, sabbatical or pregnancy leave. After the recruitment and training of physicians, 212 workers between 18 and 63 years were recruited by their physician to participate in the study. Participants had to be diagnosed by their physician with a CMD at the start of their sickness absence period (of at least two weeks) and had to have planned RTW within two weeks. Detailed information on exclusion criteria can be found elsewhere (Arends et al., 2010).

Procedure

The Medical Ethical Board of the University Medical Center, Groningen approved the study. After workers were recruited by their physician and consented to participate in the study, they received the baseline questionnaire. Following this, the physicians in the intervention group initiated the intervention. Physicians in the control group continued with treatment according to care as usual. Three months post baseline, questionnaires were sent to participants and physicians including questions about the treatment process.

Intervention

Physicians received a two-day training in the SHARP-at work intervention which was provided by experienced trainers in occupational health care interventions and guideline training. Three feedback moments (approximately 6, 12 and 18 months after the intervention training) were organised to discuss problems and successes with conducting the intervention.

The SHARP-at work intervention expands on the guideline of the Netherlands Society of Occupational Medicine on "Management of mental health problems of workers by the occupational physician" (van der Klink, 2007). This is an evidence-based guideline directed at structuring physicians' treatment to help sick-listed workers with mental health problems to return to work. The goal of the guideline is to help workers regain control by activating them to go through a problem solving process to find and implement solutions for problems that caused sickness absence and hinder. This is in line with patient empowerment theories which state that treatment should be aimed at helping patients to get a sense of control, self-determination and goal attainment (Aujoulat, d'Hoore, & Deccache, 2007; Menon, 2002). Though relapse prevention is part of the guideline (one consultation has to take place after RTW to address relapse prevention), limited attention is given to a structured follow-up by physicians after RTW has been accomplished. The SHARP-at work intervention was developed to focus on the prevention of recurrent sickness absence by structuring

physicians' guidance after RTW. The intervention was started by physicians when participants on sickness absence due to CMDs were ready to return to work and consisted of five steps which had to be followed by the participant when return to work was started. The physician ensured that all steps were taken and activated the participant when needed. The five steps comprised: (1) making an inventory of problems and/or opportunities encountered at work after RTW, (2) brainstorming about solutions, (3) writing down solutions and the support needed and assessing the applicability of these solutions, (4) discussing solutions and making an action plan with the supervisor, and (5) evaluating the action plan/implementation of solutions.

For each step of the intervention, the physician could give assignments to stimulate the participant to write down and structure the problem solving process. The first assignment was the key assignment and focused on making an inventory of problems and opportunities at the workplace. A separate component of the assignment was to decide whether help was needed to solve/realise problems/opportunities (options: A. the participant could do it him-/herself; B. help of someone else was needed; C. it was unsolvable at the moment). This first assignment was meant to activate the participant to reflect on his/her work situation when back at work. The other four assignments were: writing down solutions, preparing a consultation with the supervisor, making an action plan and evaluating the problem-solving process. The role of the physician was to guide the participant on the process level. The content of problems and solutions was not discussed by the physician. Rather, the physician stimulated the participant to reflect on the significance of problems and the feasibility of solutions. Two to five consultations within three months were recommended to the physicians for conducting the intervention.

Care as usual

All participating physicians have been trained in the evidence-based guideline of the Netherlands Society of Occupational Medicine "Management of mental health problems of workers by the occupational physician" (van der Klink, 2007) which has been described above. No additional training of physicians in the control group was part of the study and they were not familiar with the SHARP-at work intervention.

The process evaluation

The process evaluation was based on Steckler and Linnan's framework and included the components: recruitment, reach, dose delivered, dose received, fidelity and context. Additionally, as recent debates on process evaluation have suggested that Steckler and Linnan's framework needs to be extended with other concepts, such as stakeholders' beliefs and attitudes (Murta et al., 2007; Nielsen & Randall, 2012), we added a component on physicians and participants' satisfaction with treatment.

Data collection

Administrative data on the trial's effect outcome, incidence of recurrent sickness absence (yes/no), were collected during the 12-month follow-up period from the service's registry. At 3-months follow-up, the components of the process evaluation were assessed with questionnaires. Data on the components were collected on physician level (i.e. actions pertaining to the physician) and participant level (i.e. actions pertaining to the participant) for both the intervention and control group by questionnaires from physicians and participants. Thus, participants as well as physicians provided information on components at the physician level and the participant level. Table 1 provides an overview of the data collection method. Fidelity was not assessed in the control group as this component relates to the extent to which the intervention was delivered as planned which is not applicable for the control group. The different components of the process evaluation were operationalised as follows:

Recruitment

Occupational physician level. The number of physicians who agreed to participate in the study. physicians were recruited through a large Occupational Health service. The service's research coordinator randomly selected several group practices (i.e. clinical units in which physicians are organised) and invited all physicians in these group practices to participate in the study.

Participant level. The number of participants who agreed to participate in the study by filling out the baseline questionnaire. Participants were recruited by physicians.

Reach

Occupational physician level. The number of physicians randomised into the intervention group who completed the intervention training and the number of physicians randomised in the control group who participated in the information session on the study's procedures.

Participant level. The number of consultations between (1) the participant and the OP, (2) the participant and the supervisor and (3) the participant, the OP, and the supervisor. The number of consultations between the participant and the OP was categorised into <2 consultations or ≥ 2 consultations as a minimum of two consultations was advised to the OPs in the intervention group. For the other two components of reach, the number of consultations was categorised into <1 consultation or ≥ 1 consultation.

Dose delivered

Occupational physician level. Dose delivered was assessed at the physician level by questioning physicians and participants about the number and type of assignments given. Furthermore, participants were asked two questions on whether the physician stimulated them to be actively involved in the consultations and to make their own decisions. Both aspects were stressed during the intervention training for physicians. The questions were scored on a

Table 1
Data collection method for process evaluation components.

Process evaluation component	Data collected from	
	OP	Participant
Recruitment		
OP level: recruitment of OPs	X	
Participant level: recruitment of participants		X
Reach		
OP level: reach of OPs	X	
Participant level: reach of participants	X	X
Dose delivered by OPs (i.e. only OP level)	X	X
Dose received by participants (i.e. only participant level)	X	X
Fidelity		
OP level: fidelity by OPs	X	X
Participant level: fidelity by participants	X	X
Context of participants (i.e. only participant level)	X	X
Satisfaction		
OP level: satisfaction of OPs	X	
Participant level: satisfaction of participants		X

Note. OP = occupational physician.

five-point Likert scale from 1 = *totally disagree* to 5 = *totally agree*, with the option to choose *not applicable.*

Dose received

Participant level. Dose received was assessed at the participant level by questioning physicians and participants about the number and type of assignments completed by the participant. Additionally, participants were questioned about the number and type of topics discussed between the physician and the participant (a selection of seven topics related to the five intervention steps was given, with the option of an open answer).

Fidelity

Fidelity refers to the extent to which the intervention was delivered as planned, representing the quality and integrity of the intervention as conceived originally.

Occupational physician level. We defined fidelity at the physician level as the number of participants who received the two key elements of the intervention: i.e. two consultations and the first intervention assignment.

Participant level. At the participant level, fidelity was defined as the number of participants who had two consultations with the physician and completed the first intervention assignment.

Context

Participant level. Factors related to the private and work environment of the participant that could have influenced the treatment or the trial outcome (i.e. recurrent sickness absence). The incidence of a major life event in private life was measured with one question at baseline: "Did you experience any stressful life events in the past year, such as a serious illness, an accident, death, a divorce?" (yes/no). The influence of the work environment was measured with six statements for both participant and physician. One question focused on organisational changes during RTW that influenced the participant (yes/no) and a second question asked how these changes were experienced (positive, negative, neither positive nor negative). Furthermore, four statements were formulated regarding contextual factors at work that might have influenced the intervention or the trial outcome. The statements were scored on a five-point Likert scale (1 = *totally disagree* and 5 = *totally agree*, with the option to choose *not applicable*).

Satisfaction

Occupational physician and participant level. First, satisfaction was assessed by seven statements about the process of the treatment and were rated on a five-point Likert scale (1 = *totally disagree* and 5 = *totally agree*, with the option to choose *not applicable*). Second, the physician and the participant were asked to indicate what was most helpful for the participant during the post-RTW phase. The following options could be selected: consultations with the physician; consultations with the supervisor; consultations with both the physician and supervisor; the assignments; and something else (with open space to respond).

Relationship between intervention components and the incidence of recurrent sickness absence

Intervention components

We used participants' responses on the intervention components they received because the participants were blinded for their allocation status, as opposed to the physicians who were not blinded. The following components were considered to constitute the core of the intervention: (a) number of consultations between the physician and the participant ($2 \leq$ consultations or ≥ 2 consultations); (b) number of consultations between the supervisor and the participant ($1 \leq$ consultations or ≥ 1 consultations); (c) having completed the problem inventory assignment (yes/no) and (d) the inventory on whether help is needed with solving problems or realising opportunities (yes/no); (e) having discussed with the physician problems at work (yes/no); (f) having discussed with the physician opportunities at work (yes/no); (g) having discussed with the physician solutions for the problems (yes/no); (h) having discussed with the physician how to realise opportunities (yes/no). Additionally, the relationship between the total number of components received (0–8) and the incidence of recurrent sickness absence was investigated to assess whether having received more intervention components was related to a lower risk of recurrent sickness absence.

Outcome measure: incidence of recurrent sickness absence

Recurrent sickness absence (yes/no) was examined at 3, 6 and 12 months follow-up. Recurrent sickness absence was defined as a decrease in work for 30% of the contract hours due to all-cause sickness absence, regardless of partial or full RTW. For example, a participant with partial RTW for 50% of the contract hours and who went back to 20% and a participant with full RTW for 100% of the contract hours and who went back to 70% were both registered as having recurrent sickness absence.

Data analysis

Descriptive statistics were generated on the components of the process evaluation for the intervention and control group. Multilevel logistic regression analyses (with 2nd order penalised quasi-likelihood as estimation method) and multilevel linear regression analyses were performed to investigate whether differences between the two groups on reach, dose delivered, dose received, context and satisfaction were significant. We used multilevel analysis to control for dependency of participants within physician clusters.

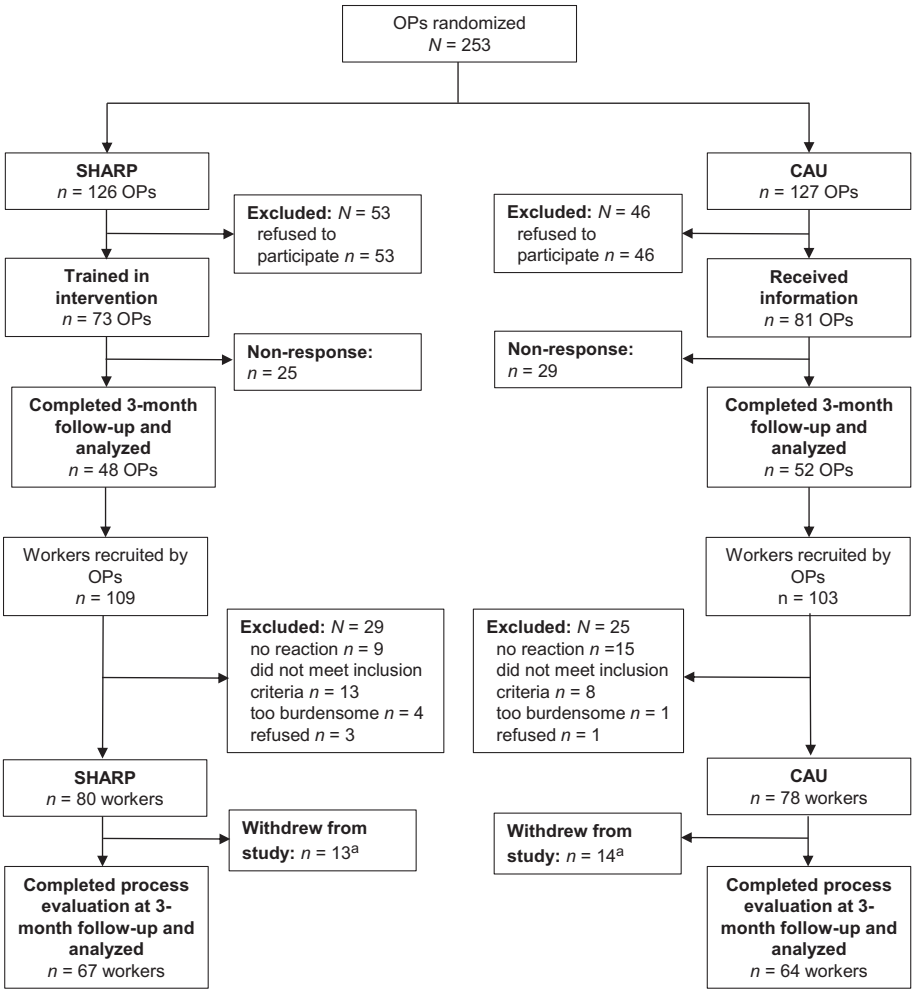
To investigate the relationship of the different intervention components with recurrent sickness absence, multilevel logistic regression analyses were performed with recurrent sickness absence at three, six and 12 months follow-up as the dependent variable and the components of the intervention as independent variables. The intervention components that constituted the key elements of the intervention were added in a multivariable multilevel logistic regression analysis. We used an alpha of <0.05 to indicate statistical significance. We did not control for potential confounders because the small sample size did not allow many variables in the regression model. Furthermore, potential confounders (i.e. sex, age, educational level, baseline symptom severity and number of sickness absence days) did not significantly correlate with the outcome, recurrent sickness absence. Analyses were performed with SPSS (20.0) and MLwiN (2.23).

Results

Below, the results of each process evaluation component are summarised.

Recruitment

Physician and participant level. Fig. 1 provides a detailed overview of the recruitment process of physicians and participants. 99 of the 253 recruited physicians refused to participate.



[a]For the intervention group, reasons for withdrawal were: health problems (n = 1), research too burdensome (n = 1), a new OP (n =1), or unknown (n = 10). For the control group, reasons for withdrawal were: health problems (n = 1), research too burdensome (n = 1), job loss (n = 2), not in the mood (n = 1), no time (n = 1), or unknown (n = 8).

Fig. 1. Flowchart of patient recruitment, allocation and outcome assessment.

Non-response analysis was not possible due to lack of information on non-responders. Of the 212 recruited workers, 54 refused participation and had to be excluded. Workers who declined participation did not significantly differ from those who agreed to participate regarding gender (59% of the responders were female compared to 63% of the non-responders, $p = 0.60$) and age (responders' mean age was 2.2 years higher, $p = 0.21$). Tables 2 and 3 present the baseline characteristics of physicians and participants. Characteristics of physicians were comparable between groups. Participants in the intervention group had more often a high educational level and had longer duration of sickness absence at baseline.

Table 2
Occupational Physician characteristics by condition.

Characteristics of OPs	SHARP ($n = 73$)		Control ($n = 81$)	
	M/n	SD/%	M/n	SD/%
Age (years)	49.9	7.6	50.5	6.9
Gender (male)	42	58.0	52	64
Years working for OHS	10.0	4.9	11.1	8.4
Working area in the Netherlands				
North	6	8	8	10
East	9	12	12	15
West	38	52	40	49
South	9	12	17	21
Sector				
Small/medium sized businesses	41	56	47	58
Large businesses	29	40	32	40

SHARP = intervention group; Control = care as usual group; OP = occupational physician; OHS = occupational health service.

Reach

Table 4 and Table 5 present the responses of participants and physicians on the components reach, dose delivered, dose received, fidelity, context and satisfaction.

Physicians level. As shown in Fig. 1 and 73 (58%) of the 126 OPs participated in the intervention training, and 81 (64%) of the 127 physicians participated in the information session on the study's procedures. The main reasons for non-participation were having been delegated new and extra duties due to a reorganisation of the service organization or an overall busy work schedule.

Table 3
Participant characteristics by condition.

Baseline characteristics		SHARP[a] ($n = 80$)		Control[a] ($n = 78$)	
		M/*n*	SD/%	*M*/*n*	SD/%
Socio-demographic characteristics					
Age (years)		41.3	9.4	43.3	9.8
Gender (male)		27	33.8	38	48.7
Marital status (married or living together)		67	83.8	60	76.9
Breadwinner (yes)		40	50.0	49	62.8
Education level					
Low		6	7.5	13	16.7
Intermediate		36	45.0	40	51.3
High		38	47.5	23	29.5
Clinical characteristics					
ICD diagnosis by OP					
F32.9 Depressive episode, unspecified		4	5.0	12	15.4
F41.9 Anxiety disorder, unspecified		0	0.0	2	2.6
F43.2 Adjustment disorders		58	72.5	39	50.0
F43.9 Reaction to severe stress, unspecified		1	1.25	0	0.0
R45 Symptoms and signs involving emotional state		7	8.75	14	17.9
Z73.0 Burn-out		2	2.5	7	9.0
Other		8	10.0	4	5.1
Work-related characteristics					
Type of occupation					
Commercial service providers		23	28.8	11	14.1
Management		11	13.8	15	19.2
Administrative staff		19	23.8	12	15.4
ICT staff		4	5.0	4	5.1
Sales staff		2	2.5	5	6.4
Health care providers		12	15.0	12	15.4
Hotel and catering staff		3	3.8	0	0.0
Stock and/or transport staff		1	1.3	11	14.1
Designers/planners		3	3.8	2	2.6
Mechanics/repairmen		2	2.5	5	6.4
Employment (hours per week)		32.6	7.0	32.9	7.3
Irregular work (e.g. shift work)		6	7.5	10	12.8
Executive/manager responsibilities		23	28.8	21	26.9
Duration of sickness absence		130.9	94.2	99.3	66.1
Health-related characteristics					
4DSQ[a]	Distress	17.6	11.4	20.3	11.1
	Depression	1.7	2.3	2.3	3.1
	Anxiety	3.6	4.3	4.5	4.6
	Somatisation	10.1	7.6	10.1	8.1
HADS[a]	Depression	7.0	4.5	7.3	4.4
	Anxiety	7.2	3.9	7.8	3.4
Outcome measure					
Incidence of recurrent sickness absence					
3 months[b]		8	11	17	22
6 months[c]		15	21	29	39
12 months[d]		24	34	35	47

[a] SHARP = intervention group; Control = care as usual group; 4DSQ = Four-Dimensional Symptom Questionnaire; HADS = Hospital Anxiety and Depression Scales.
[b] $n = 76$ in intervention group; $n = 78$ in control group.
[c] $n = 72$ in intervention group; $n = 74$ in control group.
[d] $n = 71$ in intervention group; $n = 74$ in control group.

Participant level. Compared to the control group, participants in the intervention group more frequently had ≥2 consultations with the physician according to both physicians and participants (odds ratio [OR] = 3.2, 95% confidence interval [CI] = 1.2–8.8) and ≥1 consultation with the supervisor (OR = 3.6, 95% CI = 1.1–12.0), as recommended in the intervention protocol.

Dose delivered

Physician level. All physicians in the intervention group reported that they had given assignments to the participant. Of the participants in the intervention group, 73% confirmed they had received assignments from the physician. For the control group,

Table 4
Components of the process evaluation as reported by the participants.

Components[b]	SHARP[a] ($n = 67$)	Control[a] ($n = 64$)	OR or MD[a] (95% CI)
Reach			
0–1 consultations with OP	11 (16)	24 (38)	Reference
≥2 consultations with OP	56 (84)	39 (61)	3.2 (1.2–8.8)
0 consultations with supervisor	4 (6)	12 (19)	Reference
≥1 consultations with supervisor	63 (94)	52 (81)	3.6 (1.1–12.0)
0 consultations with OP and supervisor	47 (70)	49 (77)	Reference
≥1 consultations with OP and supervisor	20 (30)	15 (23)	1.4 (0.6–3.0)
Dose delivered			
Assignments received from OP	49 (73)	5 (8)	58.6 (14.7–228.6)
Assignment 1 received	44 (66)	–	
Assignment 2 received	36 (54)	–	
Assignment 3 received	32 (48)	–	
Assignment 4 received	32 (48)	–	
Assignment 5 received	24 (36)	–	
OP stimulated being involved, mean (SD)	3.9 (1.2)	3.5 (1.4)	0.6 (0.1–1.2)
OP stimulated making own decisions, mean (SD)	3.8 (1.1)	3.6 (1.3)	0.2 (−0.3 to 0.6)
Dose received			
Assignments completed	47 (70)	5 (8)	33.8 (10.4–109.5)
Assignment 1 completed	44 (66)	–	
Assignment 2 completed	32 (48)	–	
Assignment 3 completed	27 (40)	–	
Assignment 4 completed	28 (42)	–	
Assignment 5 completed	18 (27)	–	
Topics discussed related to RTW			
Problems at work	56 (84)	40 (63)	2.9 (1.3–6.6)
Possible opportunities at work	33 (49)	17 (27)	3.1 (1.1–9.2)
Solutions for problems	39 (58)	22 (34)	2.6 (1.2–5.4)
How to realise opportunities	30 (45)	23 (36)	1.4 (0.6–3.0)
Who can help	37 (55)	14 (22)	4.3 (2.0–9.5)
How to make an action plan	17 (25)	16 (25)	1.0 (0.5–2.2)
Evaluation of RTW process	31 (46)	35 (55)	0.6 (0.3–1.4)
Fidelity OP			
≥2 consultations with OP and first assignment delivered by OP	42(63)	–	
Fidelity participant			
≥2 consultations with OP and first assignment completed by participant	43 (64)	–	
Context			
Good communication with OP in general (1–5), *M* (SD)	4.4 (0.7)	3.8 (1.0)	0.2 (−0.2 to 0.6)
Good communication with supervisor in general (1–5), *M* (SD)	3.6 (1.1)	3.8 (1.1)	−0.6 (−1.1 to −0.1)
Supervisor helped with RTW (1–5), *M* (SD)	3.3 (1.1)	3.7 (1.0)	−0.7 (−1.3 to −0.1)
Supervisor positive about treatment OP (1–5), *M* (SD)	3.6 (0.9)	3.9 (0.8)	−0.3 (−0.8 to 0.1)
Major life event in the year before baseline	33 (49)	28 (44)	1.1 (0.5–2.4)
Organisational change during RTW	34 (51)	25 (39)	1.6 (0.7–3.5)
Impact of organisational change[c]			
Positive	12 (35)	14 (56)	
Negative	9 (26)	7 (28)	
Positive nor negative	13 (38)	4 (16)	
Satisfaction			
Treatment helped with RTW (1–5), M (SD)	4.0 (1.0)	3.4 (1.2)	0.5 (−0.0 to 1.1)
Treatment appreciated (1–5), M (SD)	4.0 (0.9)	3.6 (1.1)	0.4 (−0.2 to 0.9)
Treatment overall positive (1–5), *M* (SD)	4.2 (1.0)	3.7 (1.1)	0.03 (−0.4 to 0.5)
Enough consultations with OP (1–5), *M* (SD)	4.1 (0.8)	3.6 (1.2)	0.5 (−0.1 to 1.1)
Treatment had good structure (1–5), *M* (SD)	3.9 (1.0)	3.3 (1.2)	0.5 (−0.1 to 1.0)
Good communication with OP during consultations (1–5), *M* (SD)	4.3 (0.8)	3.8 (1.0)	0.3 (−0.2 to 0.8)

Table 4 (*continued*)

Components[b]	SHARP[a] ($n = 67$)	Control[a] ($n = 64$)	OR or MD[a] (95% CI)
Implemented solutions positive (1–5), *M* (SD)	3.6 (1.0)	3.6 (1.0)	−0.02 (−0.6 to 0.6)
What helped with RTW			
Consultations OP	35 (52)	16 (25)	3.3 (1.5–7.3)
Consultations supervisor	21 (31)	24 (38)	0.7 (0.4–1.5)
Consultations supervisor + OP	14 (21)	18 (28)	0.7 (0.3–1.5)
Assignments	11 (16)	2 (3)	6.0 (1.3–28.2)
Something else	23 (34)	33 (52)	0.5 (0.2–0.9)

[a] SHARP = intervention group; Control = care as usual group; OR = odds ratio; MD = mean difference; RTW = return to work.
[b] *N* (%) reported unless indicated otherwise, significant results at $p < 0.05$ presented in bold.
[c] No significance tests due to small sample that reported organisational changes.

these responses were significantly lower; 29% of the physicians and 8% of the participants reported that assignments had been given. Regarding the assignments for the intervention group, 66% of the participants reported that they had received the first assignment (making an inventory of problems/opportunities at work), while 98% of the physicians reported they had given this assignment to the participant. For the other assignments, 54% of the participants (versus 73% of the physicians) replied they had received the assignment on writing down solutions, 48% reported (versus 63% of the physicians) that they had received the assignment on preparing a consultation with the supervisor and making an action plan and 36% reported (versus 42% of the physicians) that they had received the assignment on evaluating the problem solving process (not presented in table). Finally, 64% of the participants agreed that the physician had stimulated them to be actively involved in consultations and to make their own decisions.

Dose received

Participant level. Comparable to the results for dose delivered, participants in the intervention group more often completed assignments compared to the control group (OR = 33.8, 95% CI = 10.4–109.5). In the intervention group, 66% of the participants (versus 79% of the physicians) reported that they made the first assignment, 48% reported (versus 54% of the physicians) that they made the second assignment, 40% reported (versus 48% of the physicians) that they made the third assignment, 42% reported (versus 33% of the physicians) that they made the fourth assignment and 27% reported (versus 25% of the physicians) that they made the fifth assignment. The most common topics that were discussed in the intervention group according to the participants were problems at work (84%), possible solutions for the problems (58%) and who could help with solving the problems (55%). Significantly fewer participants in the control group reported that these topics were discussed with the physician.

Fidelity

Physician level. In the intervention group, 63% of the participants reported that they had ≥2 consultations with the physicians who provided them with the first assignment. Almost all physicians (96%) reported that they had ≥2 consultations with participant and distributed first assignment.

Participant level. In the intervention group, 64% of the participants reported that they had ≥2 consultations with the physicians and that they completed the first assignment. Of the physicians,

Table 5
Components of the process evaluation as reported by the occupational physicians.

Components[b]	SHARP[a] ($n = 48$)	Control[a] ($n = 52$)	OR or MD[a] (95% CI)
Reach participant			
0–1 consultations with participant	2 (4)	17 (33)	Reference
≥2 more consultations with participant	46 (96)	35 (67)	15.5 (1.7–141.9)
0 consultations with participant and supervisor	38 (79)	43 (83)	Reference
≥1 consultations with participant and supervisor	9 (19)	9 (17)	0.1 (0.0–0.3)
Dose delivered			
Assignments given to participant	48 (100)	15 (29)	N.E.[a]
Assignment 1 given	47 (98)	–	
Assignment 2 given	35 (73)	–	
Assignment 3 given	30 (63)	–	
Assignment 4 given	30 (63)	–	
Assignment 5 given	20 (42)		
Stimulated participant to be involved, *M* (SD)	4.2 (0.6)	3.9 (1.0)	0.4 (−0.1 to 1.0)
Stimulated participant to make own decisions, *M* (SD)	4.3 (0.6)	4.2 (0.8)	0.0 (−0.3 to 0.4)
Dose received			
Assignments completed by participant	43 (90)	11 (21)	28.8 (6.7–124.5)[c]
Assignment 1 completed	38 (79)	–	
Assignment 2 completed	26 (54)	–	
Assignment 3 completed	23 (48)	–	
Assignment 4 completed	20 (42)	–	
Assignment 5 completed	12 (25)	–	
Fidelity OP			
≥2 consultations with OP and first assignment delivered by OP	46 (96)	–	
Fidelity participant			
≥2 consultations with OP and first assignment completed by participant	38 (79)	–	
Context			
Good communication with participant in general (1–5), *M* (SD)	4.2 (0.6)	4.2 (0.7)	−0.2 (−0.5 to 0.1)
Good communication with supervisor in general (1–5), *M* (SD)	4.0 (0.9)	3.9 (0.8)	0.0 (−0.6 to 0.6)
Supervisor helped with RTW (1–5), *M* (SD)	3.9 (0.8)	4.0 (0.8)	0.25 (−0.2 to 0.7)
Supervisor positive about treatment OP (1–5), *M* (SD)	3.9 (0.8)	3.9 (0.7)	0.0 (−0.5 to 0.5)
Organisational change during RTW	24 (50)	24 (46)	1.3 (0.4–4.3)
Impact of organisational change[d]			
Positive	11 (46)	11 (46)	
Negative	5 (21)	5 (21)	
Positive nor negative	8 (33)	8 (33)	
Satisfaction			
Treatment helped with RTW (1–5), *M* (SD)	3.8 (0.8)	4.1 (0.9)	−0.4 (−0.9 to −0.0)
Treatment applicable (1–5), *M* (SD)	3.8 (1.0)	–	
Treatment overall positive (1–5), *M* (SD)	3.8 (0.8)	4.3 (0.6)	−0.5 (−1.0 to −0.1)
Enough consultations with worker (1–5), *M* (SD)	4.3 (0.8)	4.1 (0.7)	0.0 (−0.5 to 0.5)
	4.0 (0.7)	4.0 (0.6)	

(*continued on next page*)

Table 5 (*continued*)

Components[b]	SHARP[a] ($n = 48$)	Control[a] ($n = 52$)	OR or MD[a] (95% CI)
Treatment had good structure (1–5), *M* (SD)			−0.2 (−0.5 to 0.2)
Good communication with participant during consultations (1–5), *M* (SD)	4.3 (0.5)	4.3 (0.6)	−0.2 (−0.5 to 0.2)
Implemented solutions positive (1–5), *M* (SD)	3.9 (0.9)	4.0 (0.8)	−0.3 (−0.9 to 0.3)
What helped with RTW			
Consultations OP	24 (50)	18 (35)	1.8 (0.6–6.1)
Consultations supervisor	18 (38)	10 (19)	2.4 (0.6–9.3)
Consultations supervisor + OP	12 (25)	19 (37)	0.5 (0.2–1.4)
Assignments	29 (60)	4 (8)	138.4 (5.3–3838.4)
Something else	14 (29)	30 (58)	0.2 (0.1–0.6)

[a] SHARP = intervention group; Control = care as usual; OR = odds ratio; MD = mean difference; N.E. = not estimable; RTW = return to work.
[b] N (%) reported unless indicated otherwise, significant results $p < 0.05$ are presented in bold.
[c] 1st order maximised quasi-likelihood used as estimation method.
[d] No significance tests due to small sample that reported organisational changes.

79% reported that they had ≥2 consultations with the participant and that the participant completed the first assignment.

Context

Participant level. For the participants in the intervention group, the context in which the treatment took place was characterised by good communication with the physician and the supervisor. Participants in the control group also responded that in general communication with the physician and the supervisor was good. Similar responses were provided by physicians in the intervention and control group. According to participants in the intervention group, 51% had to deal with an organisational change during the first three months of RTW compared to 39% in the control group; this difference was not statistically significant.

Satisfaction

Physician level. Physicians in the intervention and control group were both positive about the treatment they had provided. The former indicated that the intervention was applicable. With respect to aspects that helped in the post-RTW phase, physicians (36% in both the intervention and control group) reported that support and treatment from other health care professionals (mainly psychologists and social workers) was helpful.

Participant level. Participants in the intervention and control group were both positive about the treatment by the physicians. With respect to aspects that helped in the post-RTW phase, participants (39% in the intervention group and 33% in the control group) mentioned that support from colleagues and friends was helpful for RTW.

Relationship between intervention components and the incidence of recurrent sickness absence

Three intervention components were significantly related to recurrent sickness absence at three, six and 12 months (Table 6). Participants who made the inventory on whether help was needed with solving problems or realising opportunities (OR = 0 0.10, 95% CI = 0.02–0.69) and had discussed with the physician how opportunities could be realised at work (OR = 0.17, 95% CI = 0.04–0.73) had a significantly lower risk of recurrent sickness absence. In contrast, participants who made the problem inventory had a significantly higher risk of recurrent sickness absence (OR = 15.3, 95% CI = 1.78–132.4). Participants who received more intervention components did not have a reduced risk of recurrent sickness absence compared to participants who received fewer components.

Table 6
Multivariable multilevel logistic regression model showing the relationship between the key intervention components and the incidence of recurrent sickness absence ($N = 67$).

Components[a]	*B*	SE	Or	95% CI		*p*
				LL[b]	UL[b]	
Consultations with OP (reference ≤2 consultations)	2.16	1.14	8.67	0.93	81.00	0.058
Consultations with supervisor (reference ≤1 consultations)	−0.81	1.19	0.44	0.04	4.58	0.498
Inventory of problems/opportunities (reference = not made)	2.73	1.10	15.3	1.78	132.4	0.013
Inventory of help needed (reference = not made)	−2.27	0.97	0.10	0.02	0.69	0.019
Problems at work discussed with OP (reference = no)	−1.73	1.14	0.18	0.02	1.66	0.129
Opportunities at work discussed with OP (reference = no)	0.61	0.69	1.84	0.48	7.11	0.377
Solutions for problems discussed with OP (reference = no)	1.24	0.81	3.46	0.71	16.90	0.126
How to realise opportunities discussed with op (reference = no)	−1.78	0.75	0.17	0.04	0.73	0.018
Total number of components received (0–8)	0.01	0.16	1.00	0.74	1.38	0.956

[a] Significant results at $p < 0.05$ are presented in bold.
[b] LL = lower limit, UL = upper limit.

Discussion

The results showed that the majority of the participants in the intervention group received the key components of the SHARP-at work intervention. The intervention reached the participants through the physician consultations. The majority of the intervention group made the first assignment, which was one of the key elements of the intervention. When comparing the results on reach, dose delivered and dose received for the intervention group with the control group, fewer activities took place in the control group. Less often consultations with the physician took place, and assignments were rarely provided. Furthermore, important topics related to the intervention were more often discussed between participants and physicians in the intervention group compared to the control group. There were no major differences between the intervention and control group for satisfaction with the treatment and for contextual factors that might have influenced the treatment or the study outcomes. Overall, participants and physicians in the intervention group were satisfied with the intervention, considered it helpful for RTW and applicable.

Within the intervention group, some differences were observed. For example, not all participants received and made the first intervention assignment (i.e. inventory of problems/opportunities and help needed) and reported that the physician stimulated them to make their own decisions, two important elements of the intervention. During the intervention training for the physicians it became clear that they had difficulties leaving decisions up to patients, which is probably due to their profession as a medical doctor where they are used to diagnose and provide a solution (i.e. treatment plan). More attention should have been paid in the training on how to leave decisions up to the client. Additionally, a follow-up to ensure that participants (at least) complete the first assignment should be included in the intervention protocol. Compared to the first assignment, a much

smaller proportion of participants received/completed the other four assignments, but this is in line with the intervention protocol. In the protocol it was stressed that the first intervention assignment was compulsory for all participants as this assignment is essential to instigate the problem solving process. The other assignments could be provided based on the necessities of the particular participant. For example, not every participant might have needed help in preparing a consultation with the supervisor or in developing an action plan. To make the intervention more tailor-made, physicians were free to assess whether (one of the) other assignments would be helpful.

The majority of the participants in the intervention group received the core elements of the intervention, and the OP treatment in the intervention was significantly more intensive than in the control group. Therefore, we conclude that the lower risk of recurrent sickness absence that was found in the effect evaluation for the intervention group, compared to the control group, was due to the effectiveness of the intervention components. Thus, the results provide support for implementing the intervention in practice.

The analysis of the relationship between the key components of the intervention and the incidence of recurrent sickness absence showed that participants who made the inventory of problems or opportunities at work had a significantly higher risk of experiencing recurrent sickness absence. One explanation for this finding is that participants who have many serious problems tend to focus on this assignment; they are also the ones most likely to have recurrent sickness absence. Participants had a significantly lower risk of recurrent sickness absence when they made the inventory of whether help was needed to solve a problem or realise an opportunity at work, and when they talked with the physician about how opportunities could be realised. A possible explanation for these results is that making an inventory of problems/opportunities at work by itself is not beneficial. It may be essential that a worker also thinks about whether help is needed to solve/realise problems/opportunities and talks about concrete improvements that can be implemented at work, as has been suggested in solution focused theories (Ratner, George, & Iveson, 2012; de Shazer, 1985). The results need to be interpreted carefully due to the small sample size. The incidence of recurrent sickness absence was rather low for the intervention group at three months follow-up. Furthermore, several intervention components were received by the majority of the participants, and thus, no clear contrast could be made between participants receiving and not receiving the components. Nonetheless, reporting these results is important. Within occupational health services, multicomponent interventions have proven to be more effective than single component interventions (Bhui, Dinos, Stansfeld, & White, 2012; de Boer et al., 2011). However, without evaluating the relationship between separate intervention components and study outcomes, we have no clear understanding of why multicomponent interventions are more effective and what the strength of these interventions is.

When comparing our study with other process evaluations of OHC interventions, it is striking that these studies often do not have a theoretical framework for the process evaluation. Furthermore, researchers have frequently focused on investigating whether the intervention was conducted according to the protocol and was feasible, but they have not connected the process evaluation to the results of the effect evaluation (van Beurden, Vermeulen, Anema, & van der Beek, 2012; Lambeek, van Mechelen, Buijs, Loisel, & Anema, 2009; van Oostrom, van Mechelen, Terluin, de Vet, & Anema, 2009; Tamminga et al., 2012). This impedes decision making on using the intervention in practice.

Strengths and limitations

One of the main strengths of this study is the thorough process evaluation based on a theoretical framework. Furthermore, we were able to link different intervention components to the study outcome to explore the working mechanism of the intervention. The use of similar questionnaires for participants and physicians enabled us to compare the perspectives of two stakeholders rather than simply one (Bouffard, Taxman, & Silverman, 2003; Hasson et al., 2012). A final strength of the study is that we compared the treatment provided in the intervention with the treatment provided in the control group. This provided information on the contrast in treatment between the two groups. Often, process evaluations only evaluate the treatment process of the intervention group (Driessen, Proper, Anema, Bongers, & van der Beek, 2010; Lambeek et al., 2009; van Oostrom et al., 2009). The disadvantage of such an evaluation is that it does not provide insight into why an intervention, conducted as planned, has no effect when participants in the control group received (unintentionally) similar or more intensive care. Based on our process evaluation, we were able to conclude that treatment in the control group was different from and less intensive than treatment in the intervention group, as expected.

Our study has several limitations. One limitation is that a large number of physicians approached did not want to participate in the intervention study. Furthermore, not all participants and OPs responded to the process evaluation questionnaires. It is possible that participants or OPs not satisfied with the intervention or care as usual refrained from completing the process questionnaire which could have biased the results. Additionally, the physicians were not blinded for the study design, which might have influenced their responses. When comparing the responses of the participants (who were blinded) and the physicians (who were not), it can be concluded that the physicians were biased in giving somewhat more positive answers regarding the treatment they provided. This is to be expected if health providers are invested in the treatment they provide. A third limitation is that we had to develop our own process evaluation questionnaires. No generic tools are available to analyse process components because interventions often vary in content and are context-dependent. Although the context of our process evaluation was specific, the method of evaluation can be transferred to other interventions in a different context. Another problem was the small sample size that impeded a robust analysis of the relationship between the key intervention components and the incidence of recurrent sickness absence. Finally, considering the generalizability of the results, we have to acknowledge that the SHARP-at work intervention was developed in a Dutch context. For countries where physicians play a less significant role in the RTW process, or where sickness absence due to CMDs is not compensated, the SHARP-at work intervention might not be applicable in its current form.

Conclusions

An important contribution of the process evaluation is that it helped explain the results of the effect evaluation. The process evaluation showed that the SHARP-at work intervention was conducted according to the protocol for the majority of the participants. Also, the intervention differed from care as usual by physicians. Based on this, we conclude that the reduced risk of recurrent sickness absence that was found in the effect evaluation for the intervention group, compared to the control group, is the result of the effectiveness of the intervention components. Furthermore, the intervention was well-received by physicians and participants. Overall, the results provide support for implementing the intervention in practice.

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