Health, social participation and entering paid employment among unemployed persons

Bouwine Carlier

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Health, Social Participation and Entering Paid Employment among Unemployed Persons

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General introduction

1

BACKGROUND

Unemployment and poor health

Unemployed persons are a specific socioeconomically disadvantaged group. They have a poorer health compared to employed persons, including a higher prevalence of illness, disability, and mortality.[1-4] Selection and causation may contribute to these socio-economic inequalities in health. The 'selection hypothesis', means that a poor health condition can hamper the unemployed in finding paid work[5-8] or can result in a labor force exit.[9] Causation may also act in two different ways. Unemployment may affect mental health, leading to increased psychological and behavioural disorders and increased risk of psychosomatic diseases and suicides.[10-12] The other way around, employment may be beneficial for health, particularly for depression and general mental health.[13, 14]

Determinants of entering paid employment

To address the complex relation between poor health and entering paid employment one needs to include self-rated health, socio-demographic characteristics, duration of unemployment, and cognitions.[15, 16] The evidence on different determinants of entering paid employment will be described shortly.

- Health

Different studies have provided evidence for the negative effect of poor general health on entering paid employment.[8, 17] Stewart et al.[18] found that people with impaired health had significantly longer unemployment spells. Persons who had poor health before exiting the labor force were less likely to re-enter paid employment after unemployment. This is in congruence with findings from other studies showing that poor mental[7] as well as physical health[19] reduced the likelihood of re-entering paid employment. In conclusion, ill health is an important barrier for re-entering paid employment among unemployed persons.

- Sociodemographic characteristics

Several studies have shown the influence of sociodemographic characteristics, such as age, sex and educational level, on entering paid employment. Unemployed persons with a younger age, men, and a higher educational level are more likely to enter paid employment.[20]

- Job search behavior

Active job-search behavior has been shown to increase employment probability. Health may influence motivational aspects and job-search behavior which may partly explain differences in re-employment between persons with good and poor health. A high intention to search for a job, a positive attitude towards seeking employment and high search self-efficacy positively influence job-search behavior and increase re-employment possibilities.[15, 21, 22] In addition to job-search cognitions, coping resources influence active job-search behavior and improve employment chances.[23, 24]

- Health and job search behavior

Poor health may have a direct effect on entering paid employment, but there may also be an indirect effect of poor health on entering paid employment through psychological factors. It may be hypothesized that poor mental health may act as a barrier for actively searching for paid employment due to a negative attitude towards work or poor coping resources.

The importance of social participation for health

Work meets important psychosocial needs and is central to individual identity, social roles, and social status. Unemployed persons have lower social capital with less resour-ces within social networks.[25] This lack of resources in social networks, as well as the lack of meaningful activities and a meaningful social role, may have a negative effect on the health of unemployed persons. Socially inactive persons have poorer general health and they are more likely to suffer from limiting and long-standing illnesses[26] and depression.[27] In several Scandinavian studies mortality was higher among persons with low social participation.[28-30] Different studies found a poorer health status among persons who did not volunteer or did not engage in cultural, leisure or sports activities compared to socially active persons.[31]

The influence of re-employment on health

The causation hypothesis infers that entering paid employment is beneficial to health. Several studies have reported that gaining paid employment improved mental health. One study found a reduction of distress for unemployed persons who found new jobs.[32] A follow-up study in Norway among unemployed persons showed that re-employment reduced depressive symptoms.[14]
A recent systematic review indicates that employment is beneficial for health, and particularly for depression and general mental health. For other health outcomes, there was insufficient evidence due to either inconsistency between the studies available or a lack of studies.[33]
Thus, a positive influence of re-employment on mental health has been consistently demonstrated in several studies. However, few studies have addressed other aspects of health, such as physical health or health-related quality of life. Some studies have broadened the interest towards general quality of life, whereby quality of life is seen as a reflection of the way that persons perceive and react to their health status and all other aspects of their lives. It may be influenced substantially by psychological factors unrelated to health.[18,19] There is less agreement about the influence of re-employment on quality of life.[23,24]

The results from studies on health and re-employment are reflected in the powerful message of the so-called Black report on the health of Britain's working-age population: 'Work, matched to one's knowledge and skills and undertaken in a safe, healthy environment, can reverse the harmful effects of prolonged sickness or long term unemployment, and promote health, well-being and prosperity'.[34]

Re-employment programs for unemployed persons with health problems

There is little evidence on effective re-employment programs for unemployed persons with health problems. With regard to unemployed persons with mental health problems, job-placement programs[35] and psychological interventions showed a positive effect on finding and maintaining paid work. A review indicated that there is weak evidence to support the use of vocational interventions to improve work participation; the interventions were characterized by group training techniques focusing on acquiring job-search skills, maintaining paid work, personal development

and preparedness against setbacks during the job-search process.[36] An Australian study showed that an psychological intervention improved mental health, which was associated with re-employment.[37] The need for effective measures has encouraged the development of a new "Intensive Tailored, Multidisciplinary re-employment program" (ExIT) in the City of Rotterdam, the Netherlands. This program includes elements of 1) a multidisciplinary work rehabilitation program 2) job placements and continued support as needed after placement and 3) psychological interventions aimed at coping with setbacks.

OBJECTIVES OF THE THESIS

The objectives of this thesis are threefold:

1. To study the influence of health and cognitions on re-employment among long-term unemployed persons.

   The current thesis aims to add to the literature by specifying the contribution of health in relation to socio-demographic and motivational aspects for re-entering paid employment. Furthermore, the influence of health on and job-search behavior, job-search cognitions and coping resources is studied in order to explain differences in re-employment between persons with good and poor health.

2. To study the relation between re-entering paid employment and health of unemployed persons.

   The impact of re-employment on mental health is well-established. The objective of this part of the thesis is to determine the effect of re-employment on quality of life and self-rated health among unemployed persons on social benefits in the Netherlands.

3. To study the effectiveness of re-employment interventions on health, social participation and re-employment of persons with mental health problems.

   The third objective of this thesis is to evaluate re-employment interventions on health, social participation and re-employment. The influence of a re-employment program is studied, in which employment professionals and mental health professionals worked together in interdisciplinary teams, on entering employment as well as physical and mental health of unemployed persons with mental health problems. Also, a systematic literature review was conducted on the effectiveness of re-employment program for health with a meta-analysis to estimate the magnitude of these health benefits.

DATASETS USED

The analyses of this thesis were based on three different datasets. A longitudinal study was conducted to investigate the association between health, cognitions and re-employment among unemployed citizens of the city of Rotterdam. A prospective study with 18 months follow-up was conducted among unemployed persons receiving social benefits in the Netherlands.
Finally, a quasi-experiment was conducted with a comparison of a re-employment program with regular re-employment programs in Rotterdam.

Health, cognitions and job search behaviour dataset

In chapter 3 the association between health, cognitions and re-employment was studied in a longitudinal study with 6 months follow-up among unemployed persons on social security benefits, who were referred to a re-employment training center for a re-employment training by the Employment Centre of the City of Rotterdam, The Netherlands. Some of the participants did have chronic health problems, but were declared fit enough to be capable of full time employment after investigation by a physician, a psychologist, and an employment specialist.
From December 2004 until December 2007, every week on average 19 subjects were enrolled in the study. In total, 2754 eligible participants were included in the study. Information about socio-demographic characteristics, health related quality of life (measured by the SF-36), and psychological measures of participants were collected with postal questionnaires and face-to-face interviews in different languages (Dutch, Turkish, Arabic (interview)). At baseline the response was 66% (1829/2754) and after a follow-up period of approximately 6 months the response was 53% (965/1829). Information about start dates of a re-employment training and start and end dates of social security benefits and reasons for ending benefits were derived from registries of the Employment Centre of the City of Rotterdam. Re-employment was defined as leaving the social security benefit services for at least three months because of starting with paid employment, verified by the national Social Security Agency.

Dataset Dutch national cohort study

Dutch national data from a cohort study among people on unemployment benefit and social insurance benefit were used in chapter 2 and chapter 4. A prospective study with 18 months follow-up was conducted among unemployed persons between 18 and 65 years receiving social benefits in the Netherlands. The data collection was part of an internal examination of the quality of the service at The Dutch Employment Centre to beneficiaries of unemployment benefits or social security benefits. Information was obtained on possible barriers for entering paid employment, including ill health, and the role of the social insurance agency in facilitating re-employment. Follow up questionnaires were sent to subjects who had indicated in the former questionnaire to be still unemployed. The Dutch Employment Centre generated a dataset of 70,121 persons, who were on social benefits for at least 6 months in 2006. From this dataset an age-stratified random sample was drawn of 20,847 persons on unemployment benefit (UB) or social security benefit (SSB). Four sequential questionnaires resulted in a 35%, 59%, 40%, and 49% response. Persons with at least two complete questionnaires were included in the study. This resulted in a study sample of 4,308 persons of which 2,604 persons participated two times, 871 persons three times, and 833 persons four times. At baseline and every 6 months thereafter a questionnaire was sent to the home address, followed by a single reminder after four weeks. Persons who remained unemployed received consecutive questionnaires, whereas those entering paid employment had a maximum follow-up of 6 months after the transition into employment.

The original study was conducted by the Inspection of Work & Income of the Ministry of Social Affairs and Unemployment of the Netherlands (IWI) as part of their legal duty. In this thesis we conducted a secondary data analysis.

Dataset quasi-experimental study
The study in chapter 5 was designed as a quasi-experiment on a comparison of an inter-disciplinary re-employment programme with regular re-employment programs. The propensity score matching technique was used as alternative research design to evaluate effectiveness of interventions when a randomized controlled trial is not feasible. From 2011 until 2014, persons who were recently referred to an interdisciplinary re-employment program (n=380) or a regular re-employment program (n=489), were enrolled in the study and followed for 2 years.

OUTLINE OF THIS THESIS
After this general introduction, research objective 1 will be addressed in part 1 which consists of chapter 2 and 3. The main topic is the influence of general health on cognitions, job-search behavior and entering paid employment. Health influences on job-search cognitions, like willingness to accept a job and attitude towards work, are shown.
Research objective 2 will be addressed in part 2 on the effect of re-entering paid employment on health of unemployed persons (chapter 4). The beneficial effect of re-employment on health will be determined for different subgroups and for different time frames.
In part 3 the effectiveness of re-employment programs on health and work participation is assessed. The influence of a re-employment program is studied, on entering employment as well as on physical and mental health of persons with mental health problems. Also, the influence of entering employment on physical health and mental health is analyzed. Finally, the effectiveness of re-employment programs, for health and the magnitude of these health benefits will be considered. In the general discussion, chapter 7, the research questions will be answered. Several matters that need to be considered when interpreting the findings will be explained, followed by a more detailed description of several key insights. Lastly, recommendations for researchers and policymakers will be provided.

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The Influence of Perceived Health on Labour Participation Among Long Term Unemployed

2

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ABSTRACT

Backgrounds
Few studies have addressed the specific contribution of health in relation to socio-demographic and motivational aspects to re-entering paid employment. The purpose of this study among beneficiaries of unemployment benefits is to evaluate the detrimental effects of poor health and a lack of motivation on the likelihood of getting a job and to develop a decision support model that predicts remaining unemployment after 12 months.

Methods
A longitudinal cohort study was conducted among people on unemployment benefit (UB) or social insurance benefit (SIB). The time-window of the study was 18 months. Written questionnaires were filled out 3 months post-benefit assessment, 6, 12 and 18 months.
Multivariate logistic regression analysis was used to identify the barriers of re-entering paid employment. Subsequently, a predictive model was constructed to estimate the probability for every combination of determinants for a person to remain unemployed in the next 12 months.

Results
Older age (≥55 years), a poor perceived health, and a lack of willingness to accept a job were the most prominent predictive factors for remaining unemployed after 12 months in both UB and SIB groups. Lower education in the UB group and being married or living together and poor self-reliance in the SIB group were additional risk factors for long-term unemployment.

Conclusion
Vocational rehabilitation of people on long-term social benefit should address perceived health, sociodemographic, and motivational aspects as key factors that determine prolonged unemployment. A predictive flow chart can be used to detect most vulnerable persons at risk for remaining long-term unemployment.

Introduction

Employment is generally the way most people obtain adequate economic resources for material well-being and full participation in today's society. Moreover, work meets important psychosocial needs and is central to individual identity, social roles, and social status [1].

The labour force in the Netherlands (i.e. people with a job of at least 12 h a week) amounts to around 7,100,000 with a labour participation for men of 78% and for women 59%[2] Unemployment rate among men and women was 3.6%. In 2010, the number of people on unemployment benefit (UB) in the Netherlands was approximately 260,000 persons, and the number of people on social insurance benefit (SIB) 330,000 persons [2]. In this study we will concentrate on the group of people that are unemployed (irrespectively of their health condition) and not the group of people that due to their work disability are on Work Disability Benefit.

To be eligible for a UB in The Netherlands one has to be on the payroll for at least 26 weeks in the 36 weeks before dismissal, the dismissal is not imputed by one's own fault, and the person on UB must be available for the labour force. In the time-period of this study people can receive UB for a minimum of 3 months with a maximum of 38 months. The length of the UB depends on the years worked in paid labour. If one does not fulfil the above mentioned criteria, and the income or equity is insufficient in providing ones subsistence, people become eligible for SIB.
People that obtain a SIB are obliged to seek a job or to follow a vocational rehabilitation trajectory. Some exceptions to the latter aside, such as single mothers with children under 5.

Mostly, it's been indicated that unemployment has detrimental effects on the physical and psychosocial wellbeing of unemployed individuals[3–5], a phenomenon called 'causation hypothesis' in studies about socio-economic health inequality. However, far less is known about the 'selection hypothesis', meaning that a poor health condition can hamper the unemployed in finding paid work[6, 7] or can result in a labour force exit.[8] Even in favourable economic climates unemployed people with a health problem or a disability to work are less popular with employers who have vacancies to fill.[9, 10]
Although both hypotheses are interrelated, the objective of this study will emphasize on the selection hypothesis, in which a poor health can be an important determinant of one's socio-economic position. Several studies have shown that ill health is an important issue to consider in vocational rehabilitation of unemployed persons.[1, 10–12] However, the impact of ill health relative to other well-established determinants of labour participation remains unclear.

To address the complex social context that interferes with ill-health and being (un)employed one needs to include perceived health, socio-demographic aspects (e.g. age, gender, ethnicity, marital status)[8] and motivational aspects (e.g. willingness to accept a job.[13] Several studies already indicated that these variables might be good predictors of long-term unemployment.[14–17]
A recent study showed that general health affects entries into and exits out of employment.[18] Stewart et al.[19] found that people with impaired health had significantly longer unemployment spells. Although several studies have investigated a variety of prognostic factors, few studies have addressed the specific contribution of health in relation to socio-demographic and motivational aspects to re-entering paid employment. Better understanding of a combination of those factors that determine a prolonged unemployment status might result in better targeting the most vulnerable group within the vocational rehabilitation process. As such, a predictive model

on the relative importance of each prognostic factor may facilitate prioritizing and tailoring of vocational rehabilitation. The purpose of this study is to evaluate the detrimental effects of poor health and lack of motivation on the likelihood of getting a job and to develop a decision support model that predicts remaining unemployed after 12 months.

Methods

Study Population and Design

For this study we used the data obtained by a study of the Inspection of Work and Income among 27,222 beneficiaries; 18,004 on unemployment benefit (UB) and 9,218 on social insurance benefit (SIB). In this study a baseline questionnaire was administered at 3 months post benefit application. Follow up questionnaires were administered at 6, 12, and 18 months to those subjects that indicated in the previous questionnaire not having found a job. Single reminders were sent out to non-responders after 4 weeks.

Since the target population of the current study are long-term unemployed subjects, we selected those subjects from the original sample that where still on benefit 12 months after the initial assessment for benefit, and had filled out the 18 months questionnaire (n = 3,059).

Survey

For this study we used the survey questions directed at:

- Demographic aspects, such as age, gender, ethnicity, and education. The latter was used as a proxy for social economic position.
- Household situation; children living at home, marital status, and being a breadwinner.
- Motivational aspects in finding a job, such as attitude towards work, willingness to accept a job, and selfreliance.
- Recent work history indicated by social benefit in the past 3 years and having had paid work in the past 3 years.
- Current work status or social benefit status.
- Health aspects by means of perceived health and physical or mental health problems.

Ethnicity was defined as a case in which a person was born outside the Netherlands, or one of his/her parents was born outside of the Netherlands[20]. The level of education was categorized at: primary school, pre-high school, high school, and college or university. The residential situation of the respondent was classified into three separate variables, i.e. being alone versus being married or living together, being a breadwinner or not, and having children living at home.

To consider the situation of the respondent regarding allowance or having had a paid job in the 3 years prior to inclusion in present study, we specifically asked them to indicate whether they were on social benefit (UB or SIB) the past 3 years or if they have had a paid job in the past 3 years. In the old regime (before October 2006) the benefit period could extend till 5 years. This probably accounts for the fact that not all UB responders had a job in previous 3 years. In the new regime (October 2006 and onwards) the maximum time for an UB was limited to 3 years, whereas those on SIB could be on benefit for more than 3 years. For this reason paid work in the past will only be an independent variable in the multivariate analyses considering UB subjects, whilst being on benefit in the recent past will only be taken into account in the SIB analysis.

Perceived health was assessed in all questionnaires by asking how participants perceived their health in the past 6 months. This was scored from 1 (very poor) to 5 (very good). This question was derived from the SF36.[21] Subsequently, this variable was recoded as poor (1, 2), neutral (3), and good (4, 5).
The variable about attitude towards work was constructed using 5 statements that could be answered on a 5 points-scale, running from totally agree till totally disagree: (1) 'A job is only a way to earn money, nothing more than that', (2) 'I would like to have a paid job, even if I do not need the money', (3) 'To me work is the most important activity', (4) 'Being on social benefit gives me the feeling that I take advantage', (5) 'I only apply for a job to fulfil my duty to seek a job'. The sumscore of these statements was recoded as such that there was an equal distribution of subjects over three categories (poor, neutral and good attitude towards work). The Crohnbach's alpha for this scale was 0.72.[22]
Willingness to accept the job was assessed by 5 questions: 'Are you willing to accept the following job?'—(1) A job that is under your educational capacity?, (2) Soiled work?, (3) A whole other kind of job than you would prefer?, (4) A job with a low salary? (5) A job with a long travelling time (3 h return). The sumscore of these statements was recoded as such that there was an equal distribution of subjects over three categories (poor, neutral and good). The Crohnbach's alpha for this scale was 0.76.[22]
Finally, information on self-reliance was obtained by administering the following statements: (1) 'I can manage to carry on excellently', (2) 'I can cope with everything well', (3) 'I can easily stand up for myself', (4) 'I know my right to obtain justice well'. Also for this variable, the sumscore of these statements was recoded as such that there was an equal distribution of subjects over three categories (poor, neutral and good self-reliance). The scale has good psychometric properties.[23, 24]

Analysis
Potential explanatory variables for prolonged unemployment were investigated by means of univariate and multivariate logistic regression analyses. The outcome in these analyses was whether subjects were still unemployed for 12 months or more after their initial assessment for a benefit. However, the calculated odds ratio may conceal the value of the separate risk of a given determinant on prolonged unemployment. For this purpose, we calculated the predictive risk for each statistically significant determinant (with a p value <0.10) obtained from the multivariate logistic regression analysis by using the following formula:[25, 26]

$$Px = \frac{1}{1+\left(\exp-\left(\varepsilon+\ln\left(\sqrt{}_{het_1}\right)+\ln\left(\sqrt{}_{het_2}\right)+\ldots+\ln\left(\sqrt{}_{het_i}\right)\right)\right.}$$

with $\varepsilon = \ln\left(\frac{Pa}{1-Pa}\right) Pa$ = probability of unemployment at 12 months for an average person

$\hat{\sqrt{}}_{het}$ = effect of a risk factor.

This formula gives a predicted risk for each given determinant, adjusted for the other variables in the model. All other variables in the model were set at their mean value. These probabilities present the likelihood of unemployment after 12 months. This is presented in a score chart, with rounded values of 10* ln($OR^{adjusted}$) per risk factors as scores. The ORs were derived from the multivariate analysis. For example, an ln($OR^{adjusted}$) of 0.29 results in a score of +3 in the prediction chart. The total sum score of the risk factors present for a given individual corresponds with the probability of being still unemployed after 12 months in that specific case. Finally, an attributable fraction was calculated in order to obtain a percentage that indicates to what extent being on benefit after 12 months is attributed to a given risk factor.

Results

Response

In the original cohort study the available study sample was 11,243, i.e. subjects that responded to the first questionnaire (41.3% of the initial drawn sample). In the 12 months following entry in the study 5,042 (45%) found a job without additionally being depending on a benefit, and 2,242 (20%) were lost to follow up. So, 3,959 subjects (35% of the initial sample) were invited to fill out a fourth questionnaire (at 18 months). Finally, the response to this questionnaire was 55% (n = 2,175; 1,802 in the UB group and 373 in the SIB group).

Table 1. Characteristics of the population at least 1 year on social benefit; divided into unemployment benefit (UB) and social insurance benefit (SIB)

	UB	**SIB**
	(n=1,802)	**(n=373)**
Age (mean/SD)*	48 (8)	41 (12)
Age*		
<35 years	3%	32%
35-44 years	32%	28%
45-54 years	38%	22%
>55 years	27%	18%
Sex (m/f)*	47% / 53%	29% / 71%
Education*		
Primary school	8%	17%
Pre-high school	33%	40%
High school	31%	30%
College and university	29%	13%
Migrant group (years)*	16%	35%
Marital Status (married)*	73%	28%
Children (years)	46%	47%
Breadwinner (years)*	63%	86%
Social benefit past 3 years	25%	36%
Paid work past 3 years	81%	50%
Perceived health (at baseline)		
Poor	12%	31%
Neutral	33%	40%
Good	56%	29%
Attitude towards work		
Good	33%	33%
Neutral	31%	31%
Poor	36%	36%
Willingness to accept job*		
Good	28%	28%
Neutral	38%	29%
Poor	33%	43%
Self-reliance*		
Good	31%	21%
Neutral	34%	25%
Poor	36%	55%

*Significant difference ($p \leq 0.05$) between groups

Population Characteristics
Subjects on SIB differ on almost all variables significantly from those on UB, except for attitude towards work, and having children living at home. Compared to subjects on UB, subjects on SIB were younger, mostly women, alone, and had a lower education, a poorer perceived health, and one-third had a migrant background. Due to the differences between the two benefit groups, further analysis will be conducted for each group separately. Table 1 shows the baseline characteristics of this sample.

Probability of Prolonged Unemployment
To get more insight in the causal relationship of health and long term unemployment logistic regression analysis was conducted. The results of these analyses are presented in Table 2 for the UB group and Table 3 for the SIB group. In the multivariate analysis as presented in Table 2 being aged 55 years or older showed, a poor perceived health and lower education appeared to raise the risk for unemployment after 12 months. Concomitantly, among the motivational aspects, only a poor willingness to accept a job was significantly related to unemployment after 12 months. Regarding the past work history, it appeared that being on social benefit in the past diminished the risk of prolonged unemployment.

In the multivariate analysis for the SIB group older age (≥55 years), poor perceived health, a lack of willingness to accept a job and being married of living together showed a statistically significant relationship with being unemployed after 12 months. Additionally it was found that a poor self-reliance leads to an almost threefold higher risk for unemployment in comparison with a good self-reliance.

Table 2. Prognostic factors for prolonged employment (i.e. the employment status after being 12 months on benefit) in the UB group (n=1,719)[a]

Variables	Categories	Univariate		Multivariate	
		OR	95% CI	OR	95% CI
Age	<35 years	1		1	
	35-44 years	1.2	0.7–2.0	1.3	0.7–2.4
	45-54 years	1.6	0.9–2.8	1.7	0.9–3.2
	≥55 years	5.9	3.3–10.6***	5.5	2.9–10.5***
Education	College and university	1		1	
	High school	1.2	0.9–1.5	1.1	0.9–1.5
	Pre-high school	1.8	1.4–2.2***	1.4	1.1–1.8*
	Primary school	2.4	1.7–3.6***	1.6	1.02–2.6*
Sex	Women	1		1	
	Men	1.3	1.1–1.6**	1.2	1.0–1.6 +
Migrant group	No	1		1	
	Yes	1.0	0.8–1.3	1.1	0.8–1.4
Marital status	Married/ living together	1		1	
	Single	1.0	0.8–1.2	1.1	0.8–1.4
Children at home	No	1		1	
	Yes	1.9	1.6–2.3***	1.2	1.0–1.6 +
Breadwinner	No	1		1	
	Yes	1.2	1.0–1.5*	0.9	0.7–1.2
Social benefit past 3 years	No	1		1	
	Yes	0.7	0.6–0.9**	0.8	0.6–1.0 +
Perceived health	Good	1		1	
	Neutral	1.7	1.4–2.1***	1.6	1.2–2.0***
	Poor	2.8	2.1–3.9***	3.2	2.2–4.6***
Self-reliance	Good	1		1	
	Neutral	1.1	0.9–1.4	1.1	0.8–1.4
	Poor	1.3	1.1–1.7**	1.2	0.9–1.5
Work attitude	Good	1		1	
	Neutral	1.1	0.9–1.4	1.0	0.7–1.3
	Poor	1.7	1.3–2.1***	1.2	0.9–1.5
Willingness to accept job	Good	1		1	
	Neutral	1.3	1.1–1.7**	1.3	1.0–1.7*
	Poor	2.2	1.7–2.8***	1.8	1.3–2.3***

[a] Excluding the missings in the logistic regression
* p1 p ≤ 0.05; ** p ≤ 0.01;
*** p ≤ 0.001; + p ≤ 0.10

From the multivariate analysis an overall probability for unemployment was calculated. The transformation of the predictive model into a flow chart yielded a score for age, perceived health, and willingness to accept a job for both UB and SIB group. Additional risk factors included were: education for the UB group, and marital status, paid work past 3 years, and self-reliance for the SIB group (see Fig. 1).

When none of the risk factors under study is present, the chart score will be 0 and results in the probability for still being unemployed after 12 months for the mean beneficiary in both groups, i.e. 47% for the UB group and 73% for the SIB group. From all possible scores a concomitant probability for being unemployed after 12 months could be derived, which finally was transposed into an attributable fraction indicating the attribution of a certain set of risk factors to unemployment after 12 months (see Fig. 1).
The impact of risk factors under study on being unemployed after 12 months was stronger for persons on UB than persons on SIB. An example; After a recent dismissal a 56 years old male with a poor perceived health on UB is looking for a job. This man will have a probability of 77% still being unemployed after 12 months. All risk factors together (i.e. age and poor received health) attribute for 37% to his risk of being unemployed after 12 months (see Fig. 1). If another 56 old male with a poor health perception on social insurance benefit (SIB), the probability of being unemployed 12 months after the initial assessment is 90%, whereas the attribution of the risk factors on unemployment status after 12 months is 18% in this case (see Fig. 1).

Discussion

This study presents the detrimental effects of poor health and the concomitant effects of socio-demographic and motivational aspects on the likelihood of remaining unemployed. The three most important factors accountable for unemployment for more than 12 months after the initial assessment for financial benefit appeared to be older age, poor perceived health and less willingness to accept a job in both UB and SIB group.

In most studies on unemployment older age is a negative factor for re-entering the labour market.[10, 27, 28] In the current study older age was a strong predictor for remaining unemployed after 12 months in both groups. In the SIB group the older age is strongly influenced by marital status. More detailed analysis revealed that only 23% of the people in the SIB group aged ≥55 years were married against 76% in the same age category of the UB and the concomitant effects of socio-demographic and group. Hence, probably the small part of older respondents in the SIB group living together do not feel the (financial-economic) urgency to apply for a job. This might occur in a situation where both partners are on benefit and only one of them is in a vocational rehabilitation program. However, if this partner is successfully reintegrated in employment, the other partner probably loses his or her eligibility for a SIB, due to regulations of the benefit system.

Table 3. Prognostic factors for prolonged employment (i.e. the employment status after being 12 months on benefit) in the SIB group (n=311)[a]

Variables	Categories	Univariate		Multivariate	
		OR	95% CI	OR	95% CI
Age	<35 years	1		1	
	35-44 years	1.0	0.6–1.8	1.4	0.7–2.9
	45-54 years	1.9	1.0–3.4*	1.4	0.6–3.4
	≥55 years	6.1	2.6–14.6***	3.4	1.2–9.9*
Education	College and university	1		1	
	High school	0.7	0.3–1.4	1.0	0.4–2.4
	Pre-high school	0.8	0.4–1.5	0.9	0.4–2.3
	Primary school	1.3	0.6–3.1	1.1	0.3–3.3
Sex	Women	1		1	
	Men	1.5	0.9–2.5+	1.1	0.5–2.4
Migrant group	No	1		1	
	Yes	1.2	0.7–1.9	1.1	0.6–2.1
Marital status	Married/ living together	1		1	
	Single	0.6	0.3–1.0*	0.2	0.1–0.8*
Breadwinner	No	1		1	
	Yes	1.0	0.6–2.0	2.3	0.6–8.7
Paid work past 3 years	No	1		1	
	Yes	0.4	0.3–0.7***	0.5	0.3–0.9*
Perceived health	Good	1		1	
	Neutral	2.4	1.4–4.1**	2.7	1.4–5.4**
	Poor	3.9	2.2–7.1***	3.9	1.7–8.9***
Self-reliance	Good	1		1	
	Neutral	1.4	0.8–2.6	1.2	0.5–2.6
	Poor	2.5	1.4–4.3***	2.5	1.2–5.4*
Work attitude	Good	1		1	
	Neutral	1.1	0.7–2.8	0.8	0.4–1.5
	Poor	1.7	1.0–2.8*	1.0	0.5–2.0
Willingness to accept job	Good	1		1	
	Neutral	1.1	0.6–1.9	1.3	0.6–2.6
	Poor	2.4	1.4–4.3**	2.9	1.4–6.1**

The relation between perceived health and unemployment status indicated that ill health was a strong predictor for unemployment after 12 months in both social benefit groups (UB and SIB). This is in accordance with earlier findings[8, 18, 19] and supports the importance of health management in vocational rehabilitation. In this study also a poor willingness to accept a job was a strong predictor for unemployment status after 12 months in both benefit groups. This is in accordance with several other studies[14–17]. However, the concept of willingness to accept a job is used differently among these studies. It is often used as a motivational factor on job-search research[14, 17], as indicator of job readiness in studies on welfare to-work programmes[15, 16] or as implementation intentions for seeking a job.[17] In present study willingness to accept a job was formulated in possible (negative) characteristics of a potential job and was not directly linked to the process of job seeking itself. The results of the aforementioned studies all point to the fact that motivational and intentional factors in seeking and accepting a job are important in the complex and multifaceted behaviour of job seeking. The finding of present study supports this suggestion.

Implications of the Findings

Older age, poor perceived health, a poor willingness to accept a job, lower education, personal work or benefits history, and poor self-reliance were the most important predictive factors determining prolonged unemployment. Hence, not only determinants such as age and education determine the so called 'distance to the labour market'.

Also other studies suggested that, besides these more fixed determinants, also perceived health, socio-demographic-, and motivational aspects need to be considered within vocational rehabilitation.[13, 29, 30] This especially applies to perceived health. As stated in other studies, more attention is needed for perceived heath status as predictive risk for prolonged unemployment when people apply for a social benefit due to unemployment.[7, 27, 28]

In this study, especially for elderly beneficiaries with ill health the likelihood of remaining unemployed after 12 months is high. This observation suggests that in the current policy development on continuing work at older age some groups are at risk for being displaced from the labour market without many possibilities to re-enter. A research among 935 human resource managers revealed that older people with a health problem still have big disadvantages at the labour market.[7, 9] This situation is not only present for The Netherlands, but has also been observed in other countries.[10]

Evaluation studies will need to demonstrate whether application of model as presented in this study is helpful in identifying person at risk for longterm unemployment. A similar model, aiming at indicating workrelatedness of low back pain, was successfully implemented in a Dutch guideline for occupational physicians[31] and led to substantial more reports of workrelated low backpain.[32]

Study Limitations

The response on the first questionnaire was rather low, especially in the SIB group. Other studies have also shown a modest response in this specific population.[17, 33] The fact that people just lost their job and are trying to re-enter the labour market makes them vulnerable. This might induce some reservations to participate in this kind of longitudinal studies. Another plausible reason for non-response might be the fear of losing ones benefit (even though it was communicated that anonymity was ensured). Moreover, this study was directed at a very vulnerable group, i.e. those subjects that were still unemployed and on benefit after 12 months, and who either did or did not find a job in the following 6 months. Given the above mentioned raisons the latter might hamper participation more strongly.

In order to find out whether the non-responders differed from the responders and thereby bias the results, a non-response analysis was conducted. A sample of 1000 subjects was approached with a brief questionnaire. Of this sample 392 (78%) of the UB Group and 292 (58%) of the SIB group reacted on the call. The analysis showed that the study sample consisted of relatively older subjects (≥55 years) and less young subjects (<35 years). This probably indicates that younger subjects already found a job when receiving the first questionnaire. Furthermore, the group of subjects with higher education was somewhat overrepresented. Subjects with a lower social economic position (as indicated by education) might be less willing to participate in research. Generally, the non-response analysis showed no sound evidence of a negative influence of non-response on the conclusions of the study.

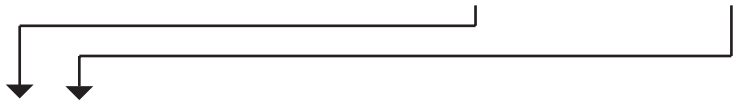
Explaining prolonged unemployment is a very complex issue with many possible determinants.[13] In this study we specifically focused on perceived health and motivational aspects as determinants amendable for change against more fixed determinants, like age, education etc. By prioritizing these aspects we are aware that other (may be still unknown) explaining factors might be overlooked.

Conclusion

In this study it was shown that older age, a poor perceived health, and a poor willingness to accept a job were the most prominent predictive risk factors for being unemployed after 12 months in both UB and SIB group, and concomitantly not finding a job in the 6 months thereafter. Vocational rehabilitation of persons on long-term social benefit should address a combination of perceived health, sociodemographic, and motivational aspects. A predictive flow chart can be used as a tool in the repertoire of a consultant to detect the most vulnerable persons at risk for long-term unemployment.

Fig. 1 Flowchart to access the attribution of risk factors to the risk of being unemployed after 12 months

Risk factor	Score if risk factor present			
	Unemployment beneficiary		Social Insurance beneficiary	
		score		score
Age (≥55 years)	+ 4	.....	+ 4	.....
Education (primary school)	+ 3	.....	.....	.....
Marital status (living together)	-------	.....	+ 10	.....
Paid work past three years (no)	-------	.....	+ 3	.....
Perceived health (poor)	+ 8	.....	+ 7	.....
Self-reliance (poor)	-------	.....	+ 3	.....
Willingness to accept a job (poor)	+ 3	.....	+ 5	.....
	Total score (0-18)		**Total score (0-32)**	



	Attributable fraction (%)	
TOTAL SCORE	**Unemployment Beneficiary**	**Social Insurance Beneficiary**
0*	0	0
1	5	3
2	10	5
3	14	7
4	17	9
5	21	11
6	24	12
7	27	14
8	29	15
9	31	16
10	33	17
11	35	18
12	37	19
13	39	20
14	40	20
15	41	21
16	42	22
17	43	22
18	44	23
19	45	23
20	46	24
21	46	24
22	47	24
23	48	24
24	48	25
25	49	25
26	49	25
27	49	25
28	50	26
29	50	26
30	50	26
31	51	26
32	51	26

* Probability for unemployment after 12 months in the mean model (if score = 0): WW: 47%; WWB: 73%

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Influence of health on job-search behavior and re-employment; the role of job-search cognitions and coping resources.

3

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ABSTRACT

Purpose
To investigate the influence of poor health on job-search behavior and re-employment, and the mediating role of job-search cognitions and coping resources.

Methods
A prospective study was conducted among unemployed persons receiving social security benefits in the Netherlands (n=510). Self-rated health, self-esteem, mastery, job-search cognitions, and the intention to search for a job were measured at baseline. Logistic regression analysis was used to investigate determinants of job-search behavior during a follow-up period of 6 months. Cox proportional hazards analysis was used to investigate the influence of health, job-search cognitions and coping resources on re-employment during a mean follow-up period of 23 months.

Results
Persons with poor health were less likely to search for paid employment (OR 0.58, 95% CI 0.39-0.85) and were also less likely to find paid employment (HR 0.58, 95% CI 0.39- 0.89). Persons with a positive attitude toward job-search, high perceived social pressure to look for a job, high job-search self-efficacy and high job-search intention were more likely to search actively and also to actually find paid employment. Adjustment for job-search cognitions and coping reduced the influence of health on active search behavior by 50% and on re-employment by 33%.

Conclusions
Health-related differences in job-search behavior and re-employment can be partly explained by differences in coping, job-search attitude, self-efficacy, and subjective norms towards job-search behavior. Measures to reduce the negative impact of poor health on re-employment should address the interplay of health with job-search cognitions and coping resources.

INTRODUCTION

Unemployed persons have a poorer health compared to employed persons, including a higher prevalence of illness and disability[1, 2] and higher mortality.[3] Unemployment may affect mental health, leading to increased psychological and behavioral disorders[4-6] and increased risk of psychosomatic diseases and suicides[7]. Since re-employment positively influences general health[8, 9], mental health[1, 5], and quality of life[8], there is a great need to develop effective re-employment strategies for unemployed persons.

While entering paid employment is beneficial to health, unemployed persons with a poor health are less likely to find employment.[10, 11] A recent study showed that persons with a poor health leaving the labor force unintentionally were less likely to re-enter paid employment.[12] Likewise, poor mental health reduced the likelihood of searching actively for paid employment[13] and of re-entering paid employment.[14] Active job-search behavior on the contrary has been shown to increase employment probability.[15] These findings suggest that health influences job-search behavior which may partly explain differences in re-employment between persons with good and poor health.

The structure of the labor market changes. Standard full-time permanent jobs are now often replaced with contingent, part-time jobs and the number of transitions in and out of the labour force is growing rapidly.[16, 17] As a result, job search has become an integral part of working life. Evidence suggests that an increase in active job-search behavior can be achieved by addressing job-search cognitions.[15, 18-20]

Cognitions towards job-search behavior can be defined as elements of the theory of planned behavior [21] and the 'attitude, social influences and self-efficacy model' (ASE-model), evolved from this theory. The four elements are: 1) specific intentions regarding how hard an individual plans to search for employment, 2) the attitude towards the behavior: whether or not a person perceives it to be beneficial to try hard to find a job, 3) the subjective norms: the perception of social pressure to look for a job , and finally 4) job-search self-efficacy: an individual's confidence in performing job-search behavior well.[20] The ASE-model has been extensively applied to explain health-related behavior[22-24] and job-search behavior among high school students[25] and among unemployed and employed persons.[26] The ASE-model was also used in a study on return-to-work after sickness absence.[27] Several studies have shown that a high intention to search for a job, a positive attitude towards seeking employment and high search self-efficacy positively influenced job-search behavior[15, 28] and increased re-employment possibilities.[14, 19, 29] Among employees on long-term sickness absence job-search cognitions were significantly associated with a higher return to work.[30, 31] In addition to job-search cognitions several coping resources, such as mastery, and self-esteem, influence active job-search behavior and improve employment chances.[32-34]

Thus far, only few studies have addressed the potential interplay between health, job-search cognitions and coping on job-search behavior and re-employment. The aims of the study were to investigate 1) the influence of health on job-search behavior and re-employment, and 2) the mediating role of job-search cognitions and coping resources in these associations.

METHODS

Design and study population

A prospective study was conducted among unemployed persons in Rotterdam receiving social security benefits, who were capable of employment and were referred to a re-employment training centre by the Employment Centre of the City of Rotterdam. Some of the participants did have chronic health problems, but were declared fit enough to be capable of full-time employment after investigation by a physician, a psychologist and an employment specialist. Study participants were invited to fill out a postal questionnaire, with information on health, job-search cognitions and coping resources. As a large part of the study population had a non-Dutch background, the questionnaire and the covering letter were translated in Turkish and sent in addition to the Dutch questionnaire to participants with a Turkish surname. If participants of the study population needed help with filling out the questionnaire, they could get help from an interviewer. Participants who needed help or did not reply to the postal questionnaire were visited by an interviewer at their home address. The interviewers were matched with the participants based on ethnicity, age and sex and could offer an interview in the mother tongue (Dutch, Arabic or Turkish). From December 2004 until December 2007, every week an average of 19 subjects was enrolled in the study. Questionnaires were used at baseline and 6 months follow-up. Information on employment status was obtained from the register of the Employment Centre of the City of Rotterdam, with a maximum of 34 months after the start of the enrolment (Figure 1). Follow-up time was 23 months on average (SD 10 months). Participation in this study was voluntary. The medical Ethics Committee of Erasmus MC in Rotterdam provided a declaration of no objection.

From the 1833 subjects who met the selection criteria to enter the study, 1188 filled out and returned the questionnaire (65%). Loss-to-follow up (678/1188) was statistically significantly higher among younger persons (OR 1.41, 95%CI: 1.15-1.71), persons who did not find employment (OR 1.22, 95% CI 1.00-1.53) and persons with a social benefit duration longer than 1 year (OR 1.30, 95% CI: 1.04-1.63) (not tabulated). The response at follow-up after 6.23 months (sd 1.72) was 54% (646/1188). Sufficient information from questionnaires and register was available for 510 respondents.

Health measure

Self-reported health was measured at baseline with the first item of the SF-36 by asking respondents to rate their overall health on a five-point scale, ranging from 'excellent', 'very good', 'good' and 'fair' to 'poor'.[35] Those reporting 'good', 'very good' or 'excellent' were defined as having a good health.

Cognitions toward job-search

To measure job-search attitude at baseline, respondents were asked to indicate the extent to which they regarded it sensible, wise, and useful to search for a job in the next 6 months.[36] Perceived behavioral control for job-search, defined as job-search self-efficacy, was measured with 2 items. "I have confidence to make a good at impression on potential employers during a job interview" and "I have confidence in my abilities to make use of friends and relatives to find a job". All items were answered on a five-point Likert scale (strongly agree to strongly disagree). Mean scores were calculated and the two highest tertiles were defined as intermediate and high self-efficacy, respectively. Subjective norm was assessed with one item, asking the respondents to indicate if "their significant other thought they should search a (new) job in the next 6 months".[36] Subjective norm was defined as high if respondent agreed or strongly agreed with this statement.

Intention to search for a job
Job-search intention was assessed with 3 questions on how much time participants intended to spend on the various job-search activities in the next 6 months. Response options ranged from 1 = no time at all to 5 = very much time. Mean scores across items were calculated and divided in tertiles. The two highest tertiles were defined as intermediate and positive intention to search for work, respectively.

Coping resources
Mastery was measured at baseline by the Personal Mastery Scale which consists of seven items (eg, "I have little control over the things that happen to me", "There is little I can do to change many of the important things in my life"), answered on a five-point Likert scale (strongly agree to strongly disagree).[37, 38] The sum scores of the 7 items were calculated, ranging from 0 to 28, with a higher score indicating a higher level of mastery. A score higher than the Dutch average (19.0) was defined as high mastery.[39] Self-esteem was measured at baseline with the Rosenberg Self-Esteem Scale with 10 items (eg, "On the whole, I am satisfied with myself", "All in all, I am inclined to feel that I am a failure"), answered on a four-point Likert scale (strongly agree to strongly disagree). Sum scores were calculated again, ranging from 1 to 40, with a higher score indicated a better self-esteem. Sum scores higher than the Dutch average (31.6) were defined as high self-esteem.[40]

Socio-demographic variables
Country of birth of the parents, highest educational level, age, sex and marital status and were included in the questionnaire. If the country of birth of at least one of the parents was outside the Netherlands, the respondent was classified as ethnic non-Dutch.[41] Education was based on highest educational attainment, and divided in three groups, e.g. high (higher vocational training or university), intermediate educational level (higher secondary schooling or intermediate vocational training) and low (no education, primary school, lower and intermediate secondary schooling or lower vocational training). A question on marital status allowed to distinguish participants who were married or living together from others.

Job- search behavior
Job-search behavior was assessed in the follow-up questionnaire by a 3-item index, based on scales of Blau[42, 43] and Kopelman, Rovenpor, and Millsap.[44] Participants were asked to indicate how much time they had spent and active job-search activities in the last 6 months. The activities included: talking with friends or relatives about possible job leads, looking for jobs on the internet or newspapers and sending out application letters, Response options ranged from 1 = no time at all to 5 = very much time. Mean scores across items were calculated and the highest tertile was defined as active job-search behavior.

Employment status
At the start and end of the study, social security benefits were registered at the Employment Centre of the City of Rotterdam, The Netherlands. In these registers, additional information about reasons for ending benefits was also administered. Re-employment was defined as leaving the social security benefit services for at least 3 months because of starting with paid employment, as verified by the national social security agency. Participants who quitted their registration for a social security benefit for other reasons, for example moving in with a partner or moving out of the city of Rotterdam, were censored at time of ending their benefit payment by the social security services.

Statistical analysis

Logistic regression analysis was performed to study the associations between self-rated health, cognitions and coping measures with active job-search behavior, adjusting for socio-demographic factors. (An odds ratio above 1 indicates an increased likelihood).

Next, in the model that examined the association between self-rated health and active job-search behavior, cognitive and coping factors were added to investigate their mediating role. The causal step approach proposed by Baron and Kenny, including their criteria for mediation (Figure 1), was used to assess mediation for each potential mediator separately.[45, 46] First, the association between self-rated health and the potential mediators was examined using logistic regression models. Next, the association between the potential mediators and active job-search behavior was assessed using logistic regression models, adjusted for self-rated health. Only those potential mediators that showed significant associations with both self-rated health and job-search behavior were considered mediators and selected for the next step. In this step, the mediators were added separately to the basic model. The percentage change in OR after addition of each mediator to the basic model was interpreted as its contribution to the explanation of the influence of health on job-search behavior. Percentage change in OR was calculated using the following formula: (100 * [ORbm + mediator − ORbm]/[ORbm − 1]).[46-48] A full model, in which all mediators were added simultaneously to the basic model, assessed the joint contribution of the mediators using bootstrap confidence intervals (figure 1).

A Cox proportional hazards analysis was used to determine the influence of health on re-employment during follow up, adjusted for socio-demographic factors. In order to calculate rates of re-employment the number of events were expressed by person-years in the study population. The follow-up period was censored at date of re-employment or the end of the follow-up period. Self-rated health was used as independent factor and again mastery, self-esteem, job-search attitude, subjective norms, job-search self-efficacy, job-search intention, and job-search behavior were added to investigate their mediating role. A hazard ratio (HR) above 1 indicates an increased likelihood of re-employment.

All statistical analyses were conducted with the statistical package IBM SPSS (version 20). Missing values in covariates were handled by multiple imputations (Markov chain Monte Carlo method) by generating five independent datasets for all analyses. Imputations were based on the relations between all associated factors included in this study. Educational level and mastery had the highest proportion of missing values (12.5%). The results of the analyses with original data did not differ from the results based on imputed data using the pooled estimates from the multivariate models. The pooled estimates were used to construct the tables.

RESULTS

Study population

More than half of the population reported a poor self-rated health and the average self-esteem level was 28.7 (sd 5.58), compared to 31.6 in the general Dutch population. About 58% of the unemployed persons had a low level of education, 72% was of non-Dutch origin and about two third was unemployed longer than 1 year (Table 1). After 6 months almost half of the study population reported active job-search behavior. During the follow-up period, 117 persons (22.9%) started with paid employment for at least 3 months.

Table 1. General characteristics, health, coping and cognitions towards job-search behavior of unemployed persons in the Netherlands (n= 510)

	Number (%)	Mean (sd)
Sex		
Men	237 (46.5)	
Women	273 (53.5)	
Age		
18-44 years	354 (69.0)	
45-60 years	156 (31.0)	
Education level		
Low	297 (58.2)	
Intermediate or higher	213 (41.8)	
Ethnicity		
Dutch	142 (27.8)	
non-Dutch	368 (72.2)	
Marital status		
Living alone	351 (68.8)	
Married/ living together	159 (31.2)	
Social benefit duration		
< 1 year	156 (30.6)	
> 1 year	354 (69.4)	
Health		
Self-rated health		
Poor	282 (55.3)	
Intermediate/ Good	228 (44.7)	
Coping resources		
Self- esteem (10-40)		28.7 (5.6)
Intermediate/ low	356 (69.7)	
High (>Dutch average of 31.6)	154 (30.3)	
Cognitions towards job-search behaviour		
Job-search attitude (0-4)		2.46 (1.19)
Low	204 (40.0)	
Intermediate/ positive	306 (60.0)	
Job-search self-efficacy (0-4)		2.11 (1.07)
Low	173 (33.8)	
Intermediate/ high	337 (66.2)	

Job-search behavior

Table 2 shows persons with a poor health were less likely to have active job-search behavior (OR 0.58, 95% CI 0.39-0.85). Unemployed persons who reported a positive attitude (OR 2.31 95% CI 1.54-3.49), higher subjective norms (OR 2.29, 95% CI 1.48-3.56) and a higher self-efficacy (OR 3.01 95% CI 1.92-4.73) for job searching, and persons with high sense of mastery (OR 1.64 95% CI 1.12-2.40) were more likely to perform active search behavior. Adjustment for cognitions towards job-search changed the odds ratios for influence of health on search behavior with 43%. Adjustment for cognitions and coping resources changed the odds ratios for influence of health on search behavior with 50% (table 3). The result of the mediation analyses showed that of the initial six potential mediators, four passed Baron and Kenny's criteria (Figure 1).
Good self-rated health was associated with a positive intention to search for a job and with positive cognitions toward job-search behavior. Furthermore, a positive intention and positive cognitions toward job-search behavior were associated with active job-search behavior, even adjusted for self-rated health (figure 1). There was a significant indirect effect of the four mediators together (OR 0.63, 95% CI 0.43-0.82) (Figure 1).

Table 2. Determinants of active search behavior and re-employment at follow-up among unemployed persons (n= 510), logistic regression analysis and cox proportional hazard analysis.

	Job- search behavior	**Re-employment**
	OR (95% CI)[ab]	HR (95% CI)[ac]
Health		
Self-rated health (poor)	**0.58 (0.39-0.85)**	**0.58 (0.39- 0.89)**
Coping resources		
Self-esteem (high)	1.40 (0.94-2.08)	1.38 (0.96-2.00)
Mastery (high)	**1.64 (1.12-2.40)**	1.14 (0.79-1.64)
Cognitions toward job-search behavior		
Job-search attitude (positive)	**2.31 (1.54-3.49)**	**2.79 (1.78-4.42)**
Job-search self-efficacy (high)	**3.01 (1.92-4.73)**	**1.71 (1.11-2.65)**
Subjective norms towards job search (high)	**2.29 (1.48-3.56)**	**2.89 (1.74-4.72)**
Job-search intention (positive)	**4.98 (2.78-8.92)**	**2.32 (1.34-4.02)**
Behavior		
Job-search behavior (active)		**2.01 (1.40-2.90)**

[a] Adjusted for sex, age, education level and social benefit duration

[b] Logistic regression analysis

[c] Cox proportional hazard analysis.

Bold means a significant association $p<0.05$

Re-employment

Persons with a poor self-rated health were about half as likely to return to paid employment (HR 0.58, 95% CI 0.39-0.89) (table 2). Active job-search behavior had a positive influence on the likelihood of becoming re-employed (HR 2.01). Unemployed persons who reported a positive attitude (HR 2.79, 95% CI 1.78-4.42), higher subjective norms (HR 2.89, 95% CI 1.74-4.72) or a higher self- efficacy (HR 1.71, 95% CI 1.11-2.65), and persons with high self-esteem (unadjusted HR 1.51, 95% CI 1.15-1.94) were more likely to find re-employment. After adjusting for cognitions towards job-search and coping resources, the influence of health on re-employment decreased with 33% (table 3). Job-search attitude made the highest unique contribution to this decrease (Table A in supplement).

Table 3. The influence of health on the likelihood of active search behaviour and re-employment (n=117), adjusted for cognitions toward job-search and coping resources of unemployed persons (n=510), logistic regression analysis and cox proportional hazard analysis.

	Job-search behavior	**Re-employment**
	OR (95% CI)[ab]	HR (95% CI)[ac]
Self-rated health (poor)	**0.58 (0.39-0.85)**	**0.58 (0.39- 0.89)**
Self-rated health + coping resources	0.66 (0.44-1.01)	**0.61 (0.40-0.92)**
Change[d]	-19%	-7%
Self-rated health +cognitions towards job-search[e]	0.76 (0.50-1.16)	0.69 (0.47-1.02)
Change[d]	-43%	-26%
Self-rated health + coping resources + cognitions towards job-search[e]	0.79 (0.51-1.24)	0.72 (0.48-1.07)
Change[d]	-50%	-33%

[a] Adjusted for age, sex, education level and social benefit duration.

[b] Logistic regression analysis.

[c] Cox proportional hazard analysis.

[d] Percentage change in odds ratios (100 * [ORbm + mediator − ORbm]/[ORbm − 1])
and in hazard ratios (100 * [HRbm + mediator − HRbm]/[HRbm − 1]).
Bold means a significant association p<0.05

[e] Job-search attitude, subjective norms towards job-search, job-search self-efficacy and job-search intention

DISCUSSION

Unemployed persons with a poor health were less likely to perform active search behavior and less often obtained re-employment. Poor health negatively influenced job-search cognitions and coping resources, which in turn resulted in less active job-search behavior and lower likelihood to gain paid employment. Adjustment for job-search cognitions and coping resources reduced the influence of poor health on active search behavior by 50%, and on re-employment by 33%.

One major strengths of this study is that a wide range of variables covering health, coping resources, cognitive factors and job-search behavior, were investigated. This allowed a broad exploration of potential mechanism underlying the negative influence of poor health on job-search behavior and re-employment. The prospective design of the study made it possible to study factors that predicted active job- search behavior 6 months later as well as re-employment during follow-up.

Survey completion (65% at baseline and 54% at follow-up) was similar as in other studies among unemployed persons; 50% response among newly unemployed Swedish[14] and 57% in Norway among long-term social assistance recipients.[49] Persons with a low educational level and a non-Dutch origin may have had difficulties with filling out the questionnaire due to illiteracy or difficulties with the Dutch language. There might also be differences in interpretation of questions caused by cultural differences. To overcome these problems interviewers were used in this study.[50-52] The interviewers could offer an interview in the mother tongue (Dutch, Arabic, or Turkish) and were particularly trained to identify cultural differences in interpretation and to explain the questions in further detail if necessary. It is expected that the questionnaires of persons with a non-Dutch origin or low literacy provided valid information. Loss to follow-up was significantly higher among younger persons, persons who did not find employment and persons with a social benefit duration more than 1 year. Loss to follow-up was not influenced by ethnicity, education or sex of the participants. Health at baseline did not differ between non-respondents and respondents at follow-up. Therefore, it is assumed that the influence of self-rated health on job-search behavior and re-employment was not influenced by selective loss to follow-up.

The lower response at follow-up among younger persons and persons who did not find paid employment may have implications for our findings regarding mediation. Young persons were more likely to report a good health and positive cognitions toward job-search, whereas persons who did not find paid employment had more negative cognitions towards job-search.
In addition, the mediating role of cognitions was larger among young persons as well as persons who did not find employment. For example, adjusting for cognitions reduced the effect of poor health on job-search behavior with 65% among persons who did not find paid employment, compared with 36% among persons who did find paid employment. Therefore, the mediating role of cognitions may be underestimated due to a higher non-response of younger persons and persons who did not find employment.
The majority of the study population (75%) had a non-native Dutch background. This warrants additional analysis on ethnic differences in the associations between health, cognitions, and job search behavior. Turkish and Moroccan persons are the largest ethnic minority groups in the Netherlands. Among ethnic minorities, subjective norms are a crucial factor in the intention to search for work,[53] while in immigrant-dense areas in the Netherlands norms regarding female employment may be less tolerant and encouraging.[54] Additional analyses of our data showed that

ethnic differences were present, especially among women. Among Turkish and Moroccan women, health had less influence on job-search behavior (OR=0.74) and re-employment (OR=1.10) than among women in other ethnic groups (OR=0.51 and OR=0.53, respectively). In addition, Turkish and Moroccan women reported lower subjective norms and self-efficacy towards job search compared with other ethnic groups. More research is needed to understand the background of these differences between ethnic subgroups and how this will impact cognitions on job search behavior and re-employment.

A limitation of the current analysis is the restriction of self-reported health to a single measure. However, the assessment of self-perceived health has been shown to be a strong predictor of mortality in high as well as low socioeconomic groups.[55] In addition, in a large European study self-rated poor health showed stronger associations with non-participation in the labor force than other measures of poor health, such as presence of chronic diseases, instrumental limitations in daily activities, and mobility problems.[56] So, self-reported health has been found to be useful in evaluating health status in epidemiologic studies. A second limitation is that all information on cognitions, coping resources, and job-search behavior was obtained through self-reported measures. Previous studies have supported the validity of the used measures to study job-search cognitions and behaviors, because they correlate with measures such as number of job interviews and job attainment.[26, 57] Self-reported data is generally used to measure job-search cognitions[19, 20], behaviors[18, 22, 23, 57, 58], self-esteem[59] and mastery.[32-34]

A third limitation is that the study population was limited to those persons who were referred to an employment training centre, rather than a random sample among all unemployed persons in the city of Rotterdam. The policy of the Employment Centre of Rotterdam was to refer everybody who was capable to work and could use some help with searching for a job. Hence, unemployed persons were not included in the study when they were not able (due to health problems), or not obliged to search for paid work. Some of the participants did have chronic health problems but were declared fit enough to be capable of full-time employment after investigation by a physician, a psychologist and an employment specialist. Persons with severe mental illness or psychotic disorders (e.g., schizophrenia) were excluded from the study. However, those with lesser conditions, such as minor depression and anxiety disorders, were included when they were declared fit enough to participate. In addition, recently unemployed persons, who were supposed to be able to find paid employment by themselves, were not included. Thus, the study population consisted of unemployed persons who needed support from employment services in finding paid employment.

Our study results corroborate findings on the negative influence of ill health on re-employment.[10, 60, 61] Few studies have reported on the influence of mental health[13] or self-rated health on job-search behavior. So, the specific contribution of the current study is that poor health negatively influences job-search behavior. Therefore, it is important to enhance job-search behavior of persons with a poor health seeking employment. The finding that cognitions influence job-search behavior, is in agreement with other studies in the United States and Canada.[15, 19, 20]
A meta-analytic review concluded that job-search self-efficacy is strongly related to job-search activities.[15] There is less emphasis in the literature on the effect of cognitive factors on re-employment outcomes, although different job-search cognitions were confirmed to be related to re-employment by studies among unemployed persons in Germany[29], Canada[19] the US[52] and the Netherlands.[13] Also, successful interventions to promote re-employment among long-term

unemployed persons and persons with (mental) health problems often address attitude, subjective norms, general self-efficacy, and self-confidence [20, 62, 63]. However, evaluation studies of these interventions measured only cognitive variables and did not take into account the role of self-rated health. The present study finds that the effect of health is to the great extent mediated by cognitions. So, the interplay of health and these cognitions should be addressed in vocational programmes.

The results of the current study provides evidence for the role of individual efforts on re-employment, as persons with active job-search behavior were twice as likely to find re-employment. This finding is supported by a previous meta-analytic review[15], showing that higher levels of job search intensity were related to receiving more job offers and shorter unemployment duration. However, studies among Croatian unemployed[18], Dutch unemployed[13] and unemployed persons in China[28] did not demonstrated this association. These studies were conducted among unemployed persons with a short unemployment duration and higher re-employment rates (42-80%).[13] Increasing the intensity of the job-search may be particularly important for unemployed persons with less re-employment possibilities.[64]

Unemployed persons with a high self-esteem are more likely to find paid employment.[64] However, the current analysis did not show an association between self-esteem and the probability to find paid employment. A possible explanation for the absence of an association between self-esteem and re-employment is the adjustment for benefit duration in the statistical models. There was a significant correlation between benefit duration and self-esteem. The unadjusted analyses showed persons with high self-esteem to be more likely to find paid employment (HR 1.51; 95% CI 1.05-2.16). This implies self-esteem should be addressed in re-employment programmes as well.

Given the rising unemployment rates in the Europe[65] and the adverse effects of unemployment on social conditions and health[66, 67], it is of paramount importance to increase labor force participation of persons with poor health. The effect of health on job-search behavior and re-employment is to a large extent mediated by coping resources and job-search cognitions. Thus, measures to increase labor force participation should address self-rated health and the interplay of health, cognitions, and coping resources.

Table A. The influence of health on the likelihood of active search behavior and re-employment (n=117), adjusted for cognitions toward job-search and coping resources of unemployed persons (n=510), logistic regression analysis (Odds ratio) and cox proportional hazard analysis (Hazard ratio).

	Job-search behavior	**Re-employment**
	OR (95% CI)[ab]	HR (95% CI)[ac]
Self-rated health (poor)	0.58 (0.39-0.85)	0.58 (0.39- 0.89)
Self-rated health + self-esteem	0.61 (0.40-0.92)	0.61 (0.40-0.92)
Self-rated health + mastery	0.65 (0.43-0.97)	0.58 (0.38-0.87)
Self-rated health + coping resources (self-esteem & mastery)	0.66 (0.44-1.01)	0.61 (0.40-0.92)
Self-rated health + Job-search attitude (positive)	0.66 (0.45-1.01)	0.65 (0.44-0.97)
Self-rated health + Job-search self-efficacy (high)	0.69 (0.46-1.04)	0.62 (0.42-0.93)
Self-rated health + Subjective norms towards job search (high)	0.63 (0.42-0.95)	0.65 (0.44-0.95)
Self-rated health + Job-search intention (positive)	0.68 (0.45-1.02)	0.63 (0.42-0.93)
Self-rated health + cognitions towards job-search[e]	0.76 (0.50-1.16)	0.69 (0.47-1.02)
Self-rated health + coping resources + cognitions towards job-search[e]	0.79 (0.51-1.24)	0.72 (0.48-1.07)

[a] Adjusted for age, sex, education level and social benefit duration

[b] Logistic regression analysis

[c] Cox proportional hazard analysis

[d] Self-esteem and sense of mastery

[e] Job-search attitude, subjective norms towards job-search, job-search self-efficacy and job-search intention
Bordered cells are equal to Table 3

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The influence of re-employment on quality of life and self-rated health, a longitudinal study among unemployed persons in the Netherlands.

4

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ABSTRACT

Background
Unemployed persons have a poorer health compared with employed persons and unemployment may cause ill health. The aim of this study was to investigate the effect of re-employment on quality of life and health among unemployed persons on social benefits.

Methods
A prospective study with 18 months follow-up was conducted among unemployed persons (n=4,308) in the Netherlands, receiving either unemployment benefits or social security benefits. Quality of life, self-rated health, and employment status were measured at baseline and every 6 months of follow up with questionnaires. Generalized estimating equations (GEE) modeling was performed to study the influence of re-employment on change in self-rated health and quality of life over time.

Results
In the study population 29% had a less than good quality of life and 17% had a poor self-rated health. Persons who started with paid employment during the follow-up period were more likely to improve towards a good quality of life (OR 1.76) and a good self-rated health (OR 2.88) compared with those persons who remained unemployed. Up to 6 months after re-employment, every month with paid employment, the likelihood of a good quality of life increased (OR 1.12).

Conclusions
Starting with paid employment improves quality of life and self-rated health. This suggests that labour force participation should be considered as an important measure to improve health of unemployed persons. Improving possibilities for unemployed persons to find paid employment will reduce socioeconomic inequalities in health.

Background

There is ample evidence for socioeconomic differences in health. Persons with a lower education, a lower occupational class, or a lower income die at younger age, and have, within their shorter lives, a higher prevalence of all kinds of health problems.[1, 2] Unemployed persons are a specific socioeconomically disadvantaged group. The relationship between unemployment and poor health has been well established, as demonstrated by a higher prevalence of illness and disability[3, 4, 5, 6] and a higher mortality among unemployed persons.[7] Two different mechanisms contribute to the poor health among unemployed persons. A poor health increases the probability of leaving the labour force and reduces the possibility of entering paid employment (selection hypothesis)[8, 9, 10, 11, 12, 13] and unemployment may cause ill health (causation hypothesis).[13]

Unemployment is deleterious to physical health[6, 7, 11, 13] as well as to mental health.[11, 13, 14, 15,16] The causation hypothesis also infers that entering paid employment is beneficial to health, but this mechanism is less well evaluated. Several studies have focused on re-employment and mental health. Various studies found that gaining paid employment improved mental health.[16] Another study found a reduction of distress for unemployed persons who found new jobs.[14] A follow-up study in Norway among unemployed persons showed that re-employment reduced the chance of depression scores to 26% and the chance of anxiety scores to 13% compared to those who were still unemployed.[17] Thus, the positive influence of re-employment on mental health has been consistently demonstrated in several studies. However, few studies have addressed other aspects of health, such as general health or health-related quality of life. Recently, a Dutch study among unemployed persons living in the City of Rotterdam found a positive effect of re-employment on general health, physical functioning, social functioning, vitality, mental health, bodily pain and role limitations due to emotional or physical problems, with effect sizes ranging from 0.11 to 0.66.[4] Some studies have broadened the interest towards general quality of life, whereby quality of life is seen as a reflection of the way that persons perceive and react to their health status and all other aspects of their lives. It may be influenced substantially by psychological factors unrelated to health.[18, 19] Quality of life generally decreases after unemployment[5, 20, 21] although one recent study have shown that a considerable number of young adults considered they had attained a better quality of life since unemployment started.[22]

Most longitudinal studies on quality of life have examined transitions from employment to unemployment, and there is less agreement about the influence of re-employment on quality of life.[23, 24] A German study showed a large drop in quality of life after unemployment and an improvement after re-employment, but quality of life among re-employed persons remained below their original level many years after entering paid employment.[23]

In conclusion, the impact of re-employment on mental health seems well-established. There is limited insight into the effect of re-employment on general health and quality of life.
The objective of the present study was to determine the effect of re-employment on quality of life and self-rated health among unemployed persons on social benefits in the Netherlands.

METHODS

Design and study population

A prospective study with 18 months follow-up was conducted among unemployed persons between 18 and 65 years receiving social benefits in the Netherlands. The data collection was part of an internal examination of the quality of the service at The Dutch Employment Centre to beneficiaries of unemployment benefits or social security benefits. Information was obtained on possible barriers for entering paid employment, including ill health, and the role of the social insurance agency in facilitating re-employment. Follow up questionnaires were sent to subjects who had indicated in the former questionnaire to be still unemployed. The Dutch Employment Centre generated a dataset of 70,121 persons, who were on social benefits for at least 6 months in 2006. From this dataset an age-stratified random sample was drawn of 20,847 persons on unemployment benefit (UB) or social security benefit (SSB). Four sequential questionnaires resulted in a 35%, 59%, 40%, and 49% response. Persons with at least two complete questionnaires were included in the study. This resulted in a study sample of 4,308 persons of which 2,604 persons participated two times, 871 persons three times, and 833 persons four times. In order to find out whether the non-respondents differed from the respondents, a sample of 1000 non-respondents was approached with a brief questionnaire. More detailed information on this additional questionnaire is published elsewhere.[25]

The two types of social benefits in the Netherlands are determined by a persons' history of paid work and the duration of the benefit. To be eligible for an unemployment benefit (UB) a Dutch worker must have had paid employment for at least 6 months prior to the benefit application. A social security benefits (SSB) is granted to all unemployed persons who do not have a recent history of paid employment of at least 6 months and do not have sufficient financial means to support themselves. The duration of UB depends on the total number of years worked, with a maximum of 5 years of this benefit. The duration of SSB is not limited in time. Long term unemployed persons and persons who have never worked will receive SSB. At baseline and every 6 months thereafter a questionnaire was sent to the home address, followed by a single reminder after four weeks. Persons who remained unemployed received consecutive questionnaires, whereas those entering paid employment had a maximum follow-up of 6 months after the transition into employment.

The study was conducted by the Inspection of Work & Income of the Ministry of Social Affairs and Unemployment of the Netherlands (IWI) as part of their legal duty. According to Dutch law, approval by a Medical Ethical Committee is not required for a questionnaire survey among adults that does not influence a person's integrity and does not subject a person to specific procedures or rules of behaviour (information available at http://www.ccmo-online.nl). Participants were fully informed about the purpose and content of the study and the use of data for scientific research. They were informed that filling out the questionnaire would be regarded as provision of informed consent. Participation in the study was voluntary and could not interfere with getting benefits or re-employment activities since no information was transferred between IWI and employment services. IWI complied with the requirements set by the Data Protection Authority, gave permission for the current study, and provided anonymous data to Erasmus MC to carry out the current study. Access to the dataset can only be obtained after permission by IWI.

Work status
Re-employment was based on self-reports in the questionnaire on having entered paid employment in the past six months. Workers were asked whether they received additional Social Security or Unemployment Benefits. Those who did not receive any social benefit were defined as having paid employment. Persons were also asked the exact date of entering paid employment (see Additional file online 1: IWI Questionnaire).

Health and quality of life
Quality of life was measured with the question 'How would you rate your life in general in the last six months?' on a ten point VAS scale.[19] Those reporting less than '6' were defined as having a poor quality of life. Self-rated health was measured by a slightly adjusted question, derived from SF36, "In general, how would you define your health in the last six months?" A five-point scale was used, ranging from 'very good', 'good', 'not good/not bad', 'poor', to 'very poor'.[26] Those reporting a poor or very poor health were defined as having a poor health and others were classified as good health.

Sociodemographic measures
Sociodemographic variables, such as age, gender, education, ethnicity, having children and marital status were included in the questionnaire. Persons were divided into three groups according to their highest level of educational attainment. A low educational level was defined as no education, primary school or pre-highschool, an intermediate educational level as highschool or vocational education and a high educational level as higher vocational education or academic degree. Ethnicity was categorized as either native Dutch (both parents were born in the Netherlands) or non-native Dutch according to Statistics Netherlands (CBS 2010). Parenthood was defined as having children under 12 years living at home. Marital status was used to distinguish those persons married or living together from others.

Data analyses
The exact date of re-employment was unknown for 922 (49%) respondents, for these persons, the re-employment duration was set at the population average of 3 months (imputation). A sensitivity analysis on subjects with complete information on exact month of entering paid employment (n=905) showed similar results based on the observed and imputed values.
In order to study associations at baseline between sociodemographic factors, type of social benefit, with the health status, logistic regression analysis was used. In the first step of the analysis, univariate associations were evaluated. Subsequently, all variables in the univariate analyses with $p < 0.20$ were investigated in a multivariate analysis using a forward selection technique with significance level of $p < 0.05$.
Generalized estimating equations (GEE) modeling was performed with quality of life and self-rated health as dependent variables over time. Independent variables were employment status, duration of the employment, time, sex, age, education, ethnic background, parenthood, marital status and type of benefit. This analysis for repeated measurements considered demographic variables as time independent, whereas employment status, duration of the employment, health, and quality of life were time dependent variables. Quality of life and health were dichotomized in order to calculate odds ratios (OR) as measure of association. A simple correlation structure was chosen, assuming a uniform correlation for all possible pairs of variables within persons (exchangeable or compound symmetry). Quality of life and health at baseline were included as independent variables in the models, and, hence an OR above 1 reflects that among those with a

transition from unemployment into paid employment health and quality of life improved compared with those without any transition. In multivariate analyses, differential effects of re-employment on health and quality of life were calculated for gender, age, education, ethnicity and social benefit type. All analyses were performed with the statistical package SPSS-PASW 17 for Windows (Predictive Analytics SoftWare).

Results

Table 1 shows the sociodemographic characteristics of the study population. Among the unemployed persons 71% had a good quality of life, and 83% had a self-rated good health. Within the study population most persons (81%) were on unemployment benefit whereas a minority (19%) was on social security benefit. Persons on unemployment benefit reported more often a good health and a good quality of life than those on social security benefit, respectively 76% versus 48% ($p< 0.05$), and 86% versus 67% ($p<0.05$). Almost half of the unemployed persons (43%) started with paid employment during the follow-up period.

Table 1. Socio-demographic characteristics, quality of life, and self-rated health among unemployed persons with benefits at enrolment in the study (n=4308)

Variables	n (%)
Sex (Woman)	2383 (55.3)
Age	
18–34 years	848 (19.7)
35–44 years	1315 (30.5)
45–54 years	1206 (28.0)
≥ 55 years	939 (21.8)
Education level	
Low	1780 (41.3)
Intermediate	1442 (33.5)
High	1086 (25.2)
Ethnicity (native Dutch)	3439 (79.8)
No children <12 years	3136 (72.8)
Marital status (Living together)	2951 (68.5)
Social security benefit	829 (19.2)
Unemployment benefit	3479 (80.8)
Good quality of life	3045 (70.7)
Self-rated good health	3562 (82.7)

The non-response analysis showed that participation was lower among persons with a lower education, persons on social security benefit, and persons under 35 years of age. An additional questionnaire among non-responders showed no differences in re-employment between responders and non-responders (details about the non-response analysis are published elsewhere[25])

Table 2 shows that younger (< 35 years) high educated persons were more likely to perceive their health as good. In addition, persons who lived together with a partner or received unemployment

benefits were also more likely to have a good health. A similar pattern was observed for good quality of life, with the exception of persons of older persons (>55 years) who were more likely to report a good quality of life. There was a moderate correlation between self-rated health and quality of life (Spearman correlation r= 0.42).

Table 2. Associations in multivariate logistic regression analyses between sociodemographic measures with self-rated good health and good quality of life among unemployed persons receiving benefits at enrolment in the study (n=4308)

Variables	Self-rated good health* OR (95% CI)	Quality of life* OR (95% CI)
Sex (women)	0.87 (0.73–1.04)	1.07 (0.92–1.23)
Age		
18–34 years	1	1
35–44 years	**0.77 (0.61–0.98)**	0.89 (0.73–1.08)
45–54 years	0.92 (0.71–1.19)	0.97 (0.78–1.19)
55–65 years	0.83 (0.63–1.08)	**1.72 (1.35–2.18)**
Education level		
Low	1	1
Intermediate	1.20 (0.99–1.45)	1.16 (0.99–1.36)
High	**1.37 (1.10–1.70)**	**1.41 (1.18–1.69)**
Ethnicity (Native Dutch)	1.17 (0.96–1.42)	**1.59 (1.35–1.88)**
No children <12 years	0.80 (0.65–0.99)	0.80 (0.67–0.96)
Marital status (living with partner)	**1.50 (1.26–1.79)**	**1.67 (1.43–1.94)**
Social security benefit	1	1
Unemployment benefit	**2.68 (2.21–3.26)**	**2.66 (2.40–3.17)**

*Adjusted for sex, age, education, ethnic background, parenthood, marital status and benefit type.
OR, Odds ratio; CI, Confidence interval.

Table 3 shows that persons who became re-employed were 2.88 times more likely to change from poor to good health compared with those who stayed unemployed (95% CI 2.37–3.50). Up to a maximum of six months after re-employment, every month in paid employment after re-employment, the likelihood of improvement of health increased with 1.05 (95% CI 0.93–1.18).

Table 3. The effect of re-employment on the probability to improve from poor to good quality of life and good self-rated health among unemployed persons during 18 months follow-up (n=4308)

	Good self-rated health		**Quality of life**	
	Unadjusted model*	Adjusted model**	Unadjusted model*	Adjusted model**
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Re-employment transition	**3.14 (2.60–3.81)**	**2.88 (2.37–3.50)**	**2.21 (2.07–2.36)**	**1.76 (1.54–2.02)**
Time re-employed (months)	1.06 (0.94–1.19)	1.05 (0.93–1.18)	**1.12 (1.03–1.23)**	**1.12 (1.02–1.23)**

*Adjusted for time.
**Adjusted for time, sex, age, education, ethnic background, parenthood, marital status, and type of benefit.
OR, Odds ratio; CI, Confidence interval.

A similar effect of re-employment on quality of life was observed (Table 3). Re-employed persons were 1.76 times more likely to change from poor to good quality of life (95% CI 1.54–2.02) compared with persons who continued to be unemployed. The duration of being re-employment was also positively associated with quality of life, increasing the likelihood of transition from poor to good quality of life with 1.12 (95% CI 1.02–1.23) with each month.
Among re-employed persons, 60% improved, 40% did not change, and 4% worsened in self-rated health after the employment transition. Among persons who continued to be unemployed, 39% improved, 61% did not change and 9% worsened in self-rated health. For quality of life similar patterns were observed. Among re-employed persons 37% improved, 63% did not change and 8% worsened in quality of life, whereas persons who continued to be unemployed 23% improved, 77% did not change and 8% improved.
The beneficial effect of re-employment on health was more profound among men (OR 3.65 95% CI 2.60–5.12) than among women (OR 2.10 95% CI 1.62–2.71) (Table 4). The positive effect of re-employment on self-rated health and quality of life decreased with increasing age.
In addition, among native Dutch persons (OR 4.01 95% CI 3.00–5.14) the increase in health was larger compared to non-native Dutch persons (OR 2.22 95% CI 1.52–3.22). Educational level of type of benefit did not influence the effect of re-employment on health or quality of life.

Table 4. Differential effects of re-employment on the probability to improve from poor to good quality of life and self-rated health among unemployed persons during 18 months follow-up for gender, age, and type of benefit (n=4308)

	Good self-rated health adjusted model OR (95% CI)**	**Good quality of life adjusted model** OR (95% CI)**
Total population	**2.88 (2.37–3.50)**	**1.76 (1.54–2.02)**
Gender		
Men × Unemployed	1	1
Men × Re-employed	**3.65 (2.60–5.12)**	**1.48 (1.22–1.79)**
Women × Unemployed	**0.82 (0.70–0.96)**	**1.17 (1.03–1.33)**
Women × Re-employed	**2.10 (1.62–2.71)**	**2.40 (1.97–2.94)**
Age		
18–34 years × Unemployed	1	1
18–34 years × Re-employed	**3.07 (1.98–4.76)**	**1.96 (1.47–2.61)**
35–44 years × Unemployed	0.72 (0.58–0.90)	0.87 (0.72–1.04)
35–44 years × Re-employed	**2.49 (1.71–3.63)**	**1.68 (1.30–2.16)**
45–54 years × Un-employed	0.83 (0.65–1.06)	0.93 (0.77–1.12)
45–54 years × Re-employed	**2.17 (1.45–3.22)**	**1.66 (1.26–2.18)**
55–65 years × Un-employed	0.98 (0.76–1.27)	1.81 (1.47–2.23)
55–65 years × Re-employed	**2.07 (1.24–3.46)**	**2.00 (1.37–2.91)**
Ethnicity		
Un-employed × Non-native Dutch	1	1
Employed × Non-native Dutch	**2.22 (1.52–3.22)**	**1.44 (1.11–1.88)**
Un-employed × Native Dutch	**1.28 (1.06–1.50)**	**1.68 (1.46–1.93)**
Employed × Native Dutch	**4.01 (3.00–5.14)**	**3.15 (2.60–3.82)**

**Adjusted for time, sex, age, education, ethnic background, parenthood, marital status, and type of benefit. OR, Odds ratio; CI, Confidence interval.

Discussion

Re-employment had a positive effect on self-rated health and quality of life. Persons who became re-employed were almost three times more likely to improve from poor to good health and 1.76 times more likely to improve from a poor to good quality of life after entering paid employment, compared with those who continued to be unemployed. For every month in paid employment after re-employment, the likelihood of changing towards a good quality of life increased with 1.12. The longitudinal design with up to four measurements in one and a half year gives more insight into the change of health before and after entering paid employment. Persons only participated in the study one more time after re-employment, so the maximum follow-up after the employment transition was six months. Previous studies showed the largest change in health in the first months after re-employment transition.[4, 17] Therefore, this study gives important information on the effects of re-employment on health and quality of life.

The response of the four sequential waves varied between 35% and 59%. Non-participation and loss-to follow up were more frequent among younger, low educated, non-native persons and persons on social security benefits. The current study showed that the effect of re-employment on health was not influenced by educational level or type of benefit. Re-employment resulted in less health benefits among persons with a non-Dutch origin and more health benefits among younger persons. Therefore, the effect of re-employment on health may be biased by selective loss to follow-up.

The monthly improvement of quality of life after re-employment was higher (OR 1.12, 95% CI 1.02–1.23] than the improvement of self-rated health (OR 1.06). The larger improvement of quality of life is likely to be explained by differences in scale size and precision of the two measures (10-point scale compared to 5-point Likert-scale). The proportion of persons reporting poor health might be too small to improve significantly. A more sensitive instrument measuring general health would have showed the positive health effect of the duration of re-employment more clearly. However, a trend in improvement of health and quality of life is demonstrated. This study showed a positive association between re-employment and a change of self-rated health after controlling for several important determinants of health. Due to practical and ethical reasons, the effect of re-employment on self-rated health cannot be studied in a randomized controlled trial. Nevertheless, in this study we observed a stable proportion of persons experiencing poor health in the group of prolonged unemployed persons (61%) and this stability is in congruence with earlier studies.[13] Repeated measurements analyses showed that among re-employed persons 60% improved in self-rated health. The improvement of health among re-employed persons compared to the stable trend of health among persons who continued to be unemployed provides evidence for a causal relation between re-employment and changes in health.

The positive change in self-rated health as a consequence of re-employment transition is in accordance with findings from previous studies. Recent studies found that re-employment had a positive effect on physical health[4], limiting illness[5] and mental health.[4, 8, 16, 27] Other studies showed the positive effect of re-employment on psychological symptoms[7], well-being[11, 14] and life satisfaction.[23] Only two studies addressed physical health, a Dutch study showed that re-employment positively influenced mental health as well as physical health in a short time window[4] and a Norwegian longitudinal study reported a positive effect of re-employment on somatic symptoms.[17]

The current study shows that starting with paid employment positively influences health and quality of life. However, there are differences between native and non-native Dutch person in the effect of re-employment on health and quality of life. Persons from minority ethnic groups may be disadvantaged in terms of pay, working conditions and job status, all factors explaining the relation between employment and health.[28] The positive health effect of becoming employed may be limited to certain employment conditions, for instance the psychosocial quality of the work[29], the number of hours worked and the type of contract, flexible versus permanent[27, 30]. In addition, among ethnic minorities in the Netherlands, flex-work is on average about twice as high as among Dutch workers.[31] However, although the non-native re-employed persons show a smaller increase in health compared to the native Dutch re-employed persons, they are still better of than their unemployed counterparts. This is also found by Grun et al.[24], who suggests that job quality only matters to some extent, since there is evidence that persons in poor quality employment are still better off, report a higher life satisfaction, than those who remain unemployed.

The current study showed that the effect of re-employment on self-rated health and quality of life decreased with an increase in age. Several studies have found that the negative effect of unemployment on health is especially large for the younger age groups.[32] Older workers who are approaching retirement may be able to cope better with unemployment compared with the younger workers who will be staying longer in the labour force. Therefore, especially among younger persons the negative effect of unemployment on health can be reversed by re-employment.

Conclusions

This study shows that persons who became re-employed were three times more likely to have a good health status after the transition into paid employment. These results suggest re-employment has a relatively large effect on general health. Unemployed persons are a specific socio-economically disadvantaged group with a relatively poor health. Re-employment is an important stimulus for improving health and reducing socioeconomic inequalities in health. Hence, labour force participation should be on the health agendas of many national governments.[33, 34, 35] Improving possibilities for unemployed persons to find paid employment will have a positive effect on public health.

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Influence of an interdisciplinary re-employment programme among unemployed persons with mental health problems on health, social participation and paid employment

5

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ABSTRACT

Purpose
To evaluate the influence of an interdisciplinary re-employment programme on labour force participation and perceived health among unemployed persons with common mental health pro-blems. In addition, the influence of entering paid employment on self-rated physical health and mental health was investigated.

Methods
In this quasi-experimental study with two years follow up, 869 persons were enrolled after referral to an interdisciplinary re-employment programme (n=380) or regular re-employment programme (n=489). The propensity score technique was used to account for observed differences between the intervention and control group. The intervention programme was provided by an interdisciplinary team, consisting of mental health care professionals as well as employment specialists. Mental health problems were addressed through cognitive counselling and individual tailored job-search support was provided by an employment professional. Primary outcome measures were paid employment and voluntary work. Secondary outcome measures were self-rated mental and physical health, measured by the Short Form 12 Health Survey, and anxiety and depressive symptoms, measured by the Kessler Psychological Distress Scale. Changes in labour force participation and health were examined with repeated-measures logistic regression analyses by the generalized estimating equations method.

Results
The interdisciplinary re-employment programme did not have a positive influence on entering employment or physical or mental health among unemployed persons with mental health problems. After two years, 10% of the participants of the intervention programme worked full-time, compared to 4% of the participants of the usual programmes (adjusted OR=1,65).
The observed differences in labour force participation were not statistically significant. However, among persons who entered paid employment, physical health improved (+16%) and anxiety and depressive symptoms decreased (-15%), whereas health remained unchanged among persons who continued to be unemployed.

Conclusions
Policies to improve population health should take into account that promoting paid employment may be an effective intervention to improve health. It is recommended to invest in inter-disciplinary re-employment programmes with a first place and train approach.

INTRODUCTION

In the past two decades employment has received growing attention as an important determinant of health inequalities.[1] Unemployed persons have a higher prevalence of illness, disability[2, 3] and psychological disorders.[4, 5] In addition, unemployed persons have a lower healthy life expectancy (reduced length of time individuals spend in good health) and a higher mortality compared to employed persons.[6, 7] Two mechanisms may contribute to these inequalities in health. The selection mechanism may act through two different pathways: unemployed persons with a poor health are less likely to enter the workforce and employed persons with poor health are more likely to become unemployed.[8-11] The causation mechanism may also act in two different ways.

Becoming unemployed has a negative effect on health. It is consistently demonstrated that individuals becoming unemployed develop poorer mental health[12-14] as well as poor self-rated health.[3] On the other hand, re-employment may be beneficial for health, particularly for mental health.[15] Several observational studies[16-19] and a recent review[20] showed a positive effect of re-employment on health, most notably on depression and mental health.

Consequently, interventions promoting employment may protect against the adverse health effects of unemployment and may improve health among unemployed persons, especially among persons with (mental) health problems. However, unemployed persons with a poor (mental) health have more difficulty finding paid employment. Therefore, effective re-employment programs are needed to improve labour force participation and health among unemployed persons with mental health problems. The Individual Placement and Support (IPS) approach for persons with severe mental health problems consists of a combination of treatment, rapid job placement, and job-coaching in the new job.[21] This integrated approach of health and employment services resulted in higher rates of competitive employment, fewer days to the first competitive job and more hours and weeks worked among persons with severe mental disorders.[22-24] As crucial factor for success is considered the alignment of the client's preferences and work possibilities with individualized job support at workplaces with receptive employers.[25]

There is also some evidence to support the use of cognitive counselling on personal development and preparedness against setbacks during the job-search process.[16] Job search interventions including motivation enhancement via cognitive counselling showed to be effective in finding paid employment.[26] A recent study showed that unemployed persons with a positive attitude towards job-search and a high self-efficacy in searching for a job were more likely to search actively and also to actually find paid employment.[27]

With this evidence in mind, a re-employment programme was developed in the city of Rotterdam, the Netherlands, for long-term unemployed persons with mental health problems. Employment professionals and mental health professionals worked together in an interdisciplinary team. Mental health problems that were a barrier to enter paid employment, were addressed by a psychologist through cognitive counseling. Simultaneously, employment professionals provided individual tailored job-search support taking into account possibilities and limitations of the client. The purpose of the programme was to increase labour force participation and improve mental health among unemployed persons with health problems. The first aim of the current study was to evaluate the influence of this re-employment programme on entering employment as well as physical and mental health of unemployed persons with common mental health problems. The second aim was to evaluate the influence of entering paid employment on physical health and mental health.

METHODS

Study design and population

The study was designed as a quasi-experiment by comparing an interdisciplinary re-employment programme with regular re-employment programmes. Randomization was not feasible since the interdisciplinary re-employment programme was already implemented within the organization. The propensity score matching technique was used as alternative research design to evaluate effectiveness of interventions when a randomized controlled trial is not feasible.[28, 29] The formal assumption is that all differences in treatment and control group are due to observable characteristics. The propensity score is defined as the conditional probability of treatment, given these characteristics.[30, 31] Eligibility criteria for participants in the study were: 1) receiving social security benefits due to unemployment, 2) capable of employment according to the social service officer and 3) recently referred to a re-employment programme by the local Employment Center.

Allocation to the treatment and control group

From March 2011 until August 2014, persons who were recently referred to an interdisciplinary re-employment programme or a regular re-employment programme, were approached by the researcher for participation in the study. Professionals of the local Employment Center referred persons to an interdisciplinary re-employment programme (treatment group) or a regular re-employment programme (control group). When employment professionals suspected mental health problems, a psychologist was involved to confirm the presence of mental health problems. Persons with common mental health problems, such as anxiety or depression, were preferably referred to the interdisciplinary re-employment programme. However, professionals of the Employment Center were often not aware of the presence of mental health problems. Therefore, among those who were referred to regular re-employment programmes, (undiagnosed) mental health problems may also be present. Figure 1 shows the diagram of the flow of participants through the phases of the study. In total, 380 persons were allocated to the intervention programme and 489 persons to usual programmes.

Intervention

Professionals from the mental health services and the employment services worked together in an interdisciplinary team to guide persons to paid employment. The programme started with an assessment by the interdisciplinary team including employment specialists, social workers and mental health professionals. Barriers for entering paid employment, such as psychological problems or debts, were addressed. Psychological resources for entering paid employment, such as self-confidence and self-efficacy, were enhanced by coaching and cognitive counselling. The cognitive counselling focussed on general- as well as job-search self-efficacy beliefs. Employment activities, such as job-search support and temporary voluntary work placement, were tailored to meet the specific needs of each unemployed person. The maximum duration of the programme was two years.

Usual re-employment programmes

There was a large variety of different employment programmes, including voluntary work programmes, physical activity programmes and life coaching. However, in none of these programmes persons were guided towards paid employment by an interdisciplinary team including mental health care professionals. The voluntary work programme facilitated placement on temporary voluntary jobs. The physical activity programme consisted of 2-weekly physical

activity (in groups or individual) in combination with vocational training aimed at re-employment. The life coaching programme was carried out by a case manager which supported persons in achieving personal goals on different domains of life, for example health, housing, financial situation, social participation or personal relationships. This could include re-employment. The duration of these programmes varied, with a maximum duration of one year.

Data collection

A questionnaire was sent to the home address of the participants, followed by two reminders two respectively four weeks later. Additional actions were undertaken to include more persons. The questionnaire and covering letter were translated in Turkish and sent in addition to the Dutch questionnaire to persons with a Turkish surname which constitute the largest ethnic minority. If persons needed help with filling in the questionnaire, they could get in touch with an interviewer. Persons who did not reply to the postal questionnaire, were visited by an interviewer at their home address with at least two attempts at different day times during a two week period.

Individual characteristics

Sociodemographic variables, such as ethnic background, education, age, sex and marital status, were collected by questionnaire. Ethnic background of the respondent was based on the country of birth of the mother. When the mother was born in The Netherlands, the country of birth of the father was used. Different ethnic groups were defined, based on differences in experiences of migration (refugees or labour migrants) and differences in geographical and cultural distance from The Netherlands. Three ethnic minority groups were defined: (1) Turks and Moroccans; (2) Antilleans and Surinamese; and (3) a miscellaneous group with all other countries of origin. Persons were divided into two groups according to the highest level of educational attainment. An intermediate/high educational level was defined as higher vocational training, university, higher secondary schooling or intermediate vocational training; and low educational level was defined as no education, primary school, lower and intermediate secondary schooling or lower vocational training. Marital status was used to distinguish those subjects married or living with a partner from others.

Three psychological factors were collected. Personal mastery was measured at baseline by the Personal Mastery Scale which consisted of six items (eg, “I have little control over the things that happen to me”, “There is little I can do to change many of the important things in my life”), answered on a five-point Likert scale (strongly agree to strongly disagree).[32] The sum score of the 6 items was calculated, ranging from 6-18; a higher score indicated a higher level of mastery. Self-esteem was measured with the Rosenberg Self-Esteem Scale[33] with 10 items (eg, ‘‘On the whole, I am satisfied with myself’’, ‘‘All in all, I am inclined to feel that I am a failure’’), answered on a four-point Likert scale (strongly agree to strongly disagree). Average sum scores were calculated, ranging from 10 to 40; a higher score indicated a higher level of self-esteem.

Attitude towards work including motivation was measured with 3 items (eg, “I am satisfied with my life if I find a job”, “I would like to have a paid job at this moment”).[27] Sum scores were calculated, ranging from 10 to 40; a higher score indicated a higher attitude towards work.

Primary outcome measures

Participation in paid employment was assessed by questions on the number of hours per week that were spend in paid work. Any paid employment was defined as working for at least one hour per week. Fulltime paid work defined as working for at least 36 hours per week.

Participation in voluntary work was assessed by 2 questions on the number of times per month a

person was actively volunteering (for example at school, in a choir, music association, sports club, hobby club, mosque or church, nursery, etc.). Five answer categories were given: “at least once a week”, “2 or 3 times a month”, “once a month”, “less than once a month”, “never”. Voluntary work was defined as actively volunteering for at least once per month.

Secondary outcome measures

Health was measured with the standardized questionnaire Short-Form Health Survey (SF12).[34] The 12 items of the SF-12 were used to calculate scores on two dimensions, physical and mental health. Scores could range from 0 to 100, with a higher score indicating a better health. Anxiety and depressive symptoms were measured with the Kessler Psychological Distress Scale (K10), which consisted of 10 items measuring the level of anxiety and depressive symptoms a person may have experienced in the last four weeks. Scores could range from 10 to 50, with a higher score indicating more anxiety and depressive symptoms.[35]

Process evaluation

During the study 12 semi-structured interviews and 2 focus group interviews were undertaken with members of the interdisciplinary team (psychologists, employment specialists, social workers) to obtain insight in the fidelity of the implementation of the interdisciplinary re-employment programme. Barriers and facilitators for implementation of the interdisciplinary re-employment programme were discussed. At the end of the intervention programme, semi-structured interviews were undertaken with 10 successful and 10 unsuccessful participants in order to obtain insight into different aspects of the intervention that could be improved in the future, from the point of view of the participants.

Statistical analyses

The propensity score is defined as the probability of exposure to the intervention given a number of confounding variables. The propensity score was estimated with logistic regression analysis, modelling the exposure to the interdisciplinary re-employment programme as dependent variable and individual characteristics as independent variables. First, univariate associations between sociodemographic characteristics, health and psychological characteristics with assignment to the intervention were investigated. Variables with a p-value of 0.10 or less were retained in the multivariate model as well as sociodemographic variables by default. In case of a high correlation between two independent variables, the variable with the highest explained variance was included in the multivariate model. For each individual, the likelihood of being exposed to the intervention was estimated with the multivariate regression model and used for covariate adjustment in the GEE analyses.[36]

To examine changes in labour force participation and health, repeated-measures regression analyses were used by the generalized estimating equations method. This method takes into account the intra-individual correlation between measurements and is not sensitive to missing measurements. Outcome measures of the repeated regression analyses were fulltime paid employment (≥ 36 hours per week), any paid employment, voluntary work, physical health, mental health and anxiety and depressive symptoms. With the following regression model the change of the outcome measure in time among participants of the interdisciplinary re-employment was compared with the change among participants in regular re-employment programmes.

$$Yt = \beta 0 + \beta 1 * \text{group } t + \beta 2 * \text{time } t + \beta 3 * \text{time X group } t + et$$

Here Yt is the outcome measure of a person at time t; group is an indicator variable for the type of programme (intervention programme = 1, regular programme = 0); time is a continuous variable indicating time in years from the start of the re-employment programme; timeXgroup is an interaction term of time and group. In this model, β0 estimates the baseline level of the outcome measure at time zero; β1 estimates the difference of the outcome measure at baseline between the two groups; β2 estimates the change of the outcome measure per year during the follow-up period (i.e. the baseline trend); and β3 estimates the change in the trend of the outcome measure in group 1 (intervention group) compared to the trend in group 0 (reference group) The error term et at time t represents the random variability not explained by the model. For the dichotomous outcome measures ((fulltime) paid employment, voluntary work), the betas were transformed in odds ratios that represented the yearly increase or decrease in the likelihood of starting with paid or voluntary work.
Variables with a maximum of 10% missing values were imputed using an iterative Markov chain Monte Carlo (MCMC) method.(see additional table 1)[37] For the dependent variables it was assumed that not filling in the questions about labour force participation implied that persons were not active on the labour market. Persons who were fulltime employed at baseline (n=7) were excluded from the analysis.

RESULTS

Figure 1 shows that, at baseline, 869 persons were enrolled in the study after referral to an interdisciplinary re-employment programme (n=380) or regular re-employment programmes (n=489). Response to the first questionnaire was 48% (n=181) among participants of the intervention programme and 52% (n=253) among participants of the usual programme. Response at follow-up was higher among participants of the usual programmes (n=107/253; 42%) than among participants of the intervention programme (51/181; 28%). Loss to follow-up was higher among younger (<35 years) participants, but not related to other individual characteristics or (mental) health at baseline.

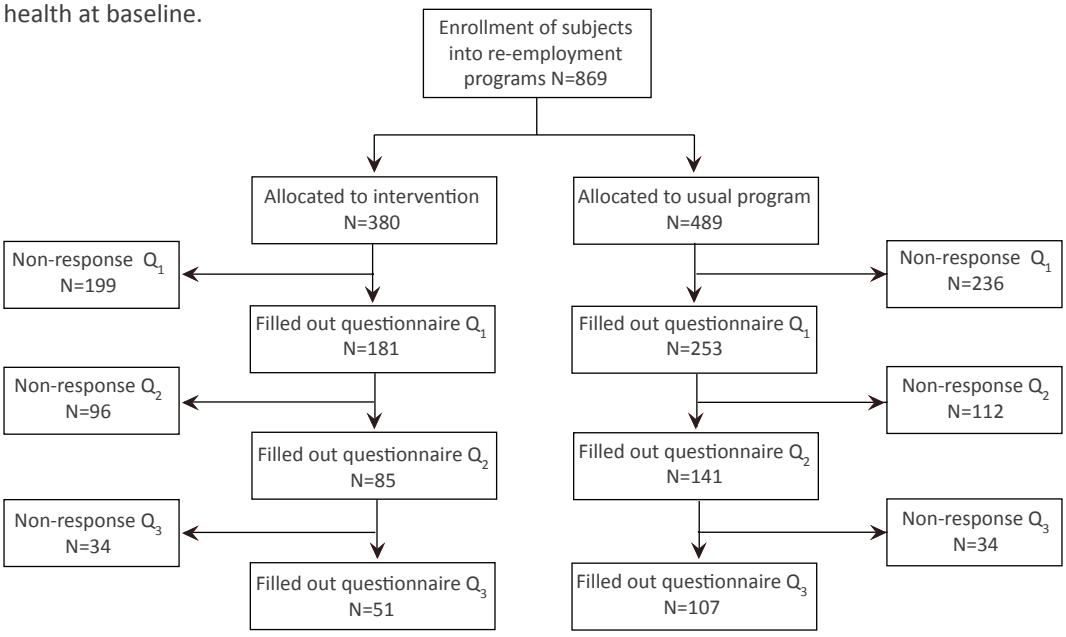

Figure 1. Flow chart filled out questionnaires among those how received the intervention or received usual care programs

Table 1 shows that participants of the intervention programme had a younger age, better Dutch language skills, a more positive attitude towards work and were more recently employed than participants of the usual programmes. On the other hand, mental health problems, low mastery, and low self-esteem were more common among participants of the intervention programme compared to the usual programmes.

The propensity score was estimated for each individual based on sociodemographic factors (sex, age, education, ethnicity) as well as unemployment duration, language skills, mental health, self-esteem and attitude towards work. Figure 2 shows that the propensity score distribution was slightly different for the intervention and usual programmes group, but showed a large overlap.

Table 1. Baseline characteristics of persons in the intervention programme and in usual programmes, and contribution to propensity score

	Intervention programme (n=181)	**Usual programmes (n=253)**	**Contribution to propensity score OR (95% CI)**
Age (mean, sd)	38.1 (7.7)	42.2 (8.4)	0.95 (0.93-0.98)
	N (%)	N (%)	
Sex (women)	108 (59.7)	131 (51.8)	1.18 (0.76-1.84)
Education			
- low	130 (70.8)	199 (78.7)	1
- intermediate / high	51 (28.2)	54 (21.3)	0.77 (0.45-1.30)
Married/living with partner	28 (15.5)	56 (22.1)	
Children	75 (41.4)	115 (45.5)	
Ethnicity			
- Native Dutch	46 (25.4)	59 (23.3)	1
- Turkish/Moroccan	41 (22.7)	48 (19.0)	1.43 (0.70-2.91)
- Surinamese/Antillean	53 (29.3)	76 (30.0)	1.12 (0.62-2.03)
- Other	41 (22.7)	70 (27.7)	1.14 (0.58-2.25)
Unemployment duration			
<1 year	39 (21.5)	35 (13.8)	1
1-5 years	72 (39.8)	83 (32.8)	0.60 (0.31-1.14)
>5 years or never worked	70 (38.7)	136 (53.8)	0.41 (0.22-0.76)
Dutch language skills (poor)	47 (26.0)	111 (43.9)	0.42 (0.24-0.73)
	Mean (sd)	Mean (sd)	
Physical health (0-100, higher is better)	54.6 (26.1)	52.1 (27.5)	
Mental health (0-100, higher is better)	44.4 (25.0)	55.5 (25.8)	0.99 (0.98-1.00)

Multivariate model: Nagelkerke R2=0.22

Table 2 shows a positive 2-yearly change in labour force participation among participants of the intervention programme as well as the usual programme. After two years, 10% of the participants of the intervention programme worked fulltime, compared to 4% of the participants of the usual programmes. The percentage of persons working any hours (at least one hour per week) increased from 9% at baseline to 26% after two years among the intervention group, compared to an increase of 8% to 22% among the usual care group. However, there was no statistically significant difference in increase of labour force participation between the intervention group and the usual care group in the unadjusted model as well as in the propensity score adjusted model.
In addition, a positive 2-yearly change of voluntary work was found among participants of the intervention programme as well as the usual programme. The percentage of persons who did voluntary work (at least once per month) increased from 19% at baseline to 35% after two years among participants of the intervention programme, compared to an increase of 26% to 42% among participants of the usual programmes. There was no statistical difference in increase of participation in voluntary work between the intervention group and the usual care group."

Table 2. Effect of participation in interdisciplinary re-employment programme and regular re- employment programmes on entering fulltime paid employment, any paid employment and voluntary work among unemployed persons

	Start of study % (N)	**After two years % (N)**	**Difference in two-year change intervention versus reference**	
Fulltime paid employment (GE>36 hours/week)			Crude OR(95%CI)	Adjusted OR(95%CI)
interdisciplinary re-employment programme	0%	9.8% (5/51)	1.50 (0.35-6.44)	1.65 (0.38-7.11)
usual re-employment programme	0%	3.7% (4/107)		
Any paid employment				
interdisciplinary re-employment programme	9.4% (17/181)	25.5% (13/51)	0.61 (0.26-1.43)	0.69 (0.25-1.87)
usual re-employment programme	7.9% (20/253)	21.5% (23/107)		
Voluntary work (at least once a month)				
interdisciplinary re-employment programme	18.8% (34/181)	35.3% (18/51)	1.25 (0.55-2.81)	1.15 (0.45-2.93)
usual re-employment programme	26.1% (66/253)	42.1% (45/107)		

Adjusted: propensity score in regression model;
Crude: propensity score not in regression model

Table 3 shows that the physical and mental health of participants of the intervention as well as the usual programme did not change during the 2-year period. At baseline, participants of the intervention programme had a worse mental health status of (mean 44.4) compared to participants of the usual programme (mean 55.5). During the 2-year period, mental health status remained unchanged among participants of the intervention as well as the usual programme. In addition, there was no significant difference in 2-year change in physical health or anxiety and depressive symptoms among participants of the intervention and usual programme.
Table 4 shows an improvement of physical health among persons who entered paid employment (+16%), whereas an improvement of physical health was not found among persons who remained unemployed. Persons who entered paid employment had a better mental health at baseline compared to persons who remained unemployed. Anxiety and depressive symptoms decreased among persons who entered paid employment (-15%), but not among those who continued to be unemployed. Starting with voluntary work was not associated with an improvement of physical health, mental health or anxiety and depressive symptoms during the 2-year follow-up period.

Table 3. Effect of participation in interdisciplinary re-employment programme and usual re-employment programmes on mental and physical health among unemployed persons

	Start of study Mean (sd)	**After two years Mean (sd)**	**Difference in two-year change Intervention versus Reference**	
			Crude Beta (sd)	**Adjusted Beta (sd)**
Physical health (0-100, higher is better)				
interdisciplinary re-employment programme	54.6 (26.1)	50.2 (27.1)	-4.09 (4.11)	-3.91 (4.11)
usual re-employment programme	52.1 (27.5)	51.7 (26.2)		
Mental health (0-100, higher is better)				
interdisciplinary re-employment programme	44.4 (25.0)	44.4 (23.6)	1.51 (4.10)	1.38 (4.15)
usual re-employment programme	55.5 (25.8)	55.0 (24.4)		
Anxiety and depressive symptoms (10-50, higher is more symptoms)				
interdisciplinary re-employment programme	28.8 (9.07)	28.0 (9.61)	-0.23 (1.60)	-0.19 (1.57)
usual re-employment programme	25.5 (9.93)	24.8 (9.65)		

Adjusted: propensity score in regression model;
Crude: propensity score not in regression model

Table 4. Change in mental and physical health during a follow-up period of two years among persons who were (part-time) employed (n=37) versus non-employed (n=397) at the end of the follow-up period

	Start of study Mean (sd)	**After two years Mean (sd) % change**	**Difference in two-year change re-employed versus unemployed Beta (sd)**
Physical health (0-100, higher is better)			
Employed (any hours) at the end of the follow-up period of two years	55.6 (31.0)	64.6 (22.0) +16.2%	14.99 (6.12)*
Continuously unemployed	52.9 (26.6)	47.1 (26.4) -11.0%	
Mental health (0-100, higher is better)			
Employed (any hours) at the end of the follow-up period of two years	58.2 (22.2)	60.0 (24.1) +3.1%	2.89 (5.46)
Continuously unemployed	50.1 (26.3)	48.9 (24.2) -2.4%	
Anxiety and depressive symptoms (10-50, higher is more symptoms)			
Employed (any hours) at the end of the follow-up period of two years	26.2 (9.4)	22.4 (8.4) -14.5%	-3.67 (2.13)**
Continuously unemployed	27.0 (9.7)	26.9 (9.9) -0.4%	

* $p<0.05$; ** $p<0.10$
Adjusted: propensity score in regression model;
Crude: propensity score not in regression model

DISCUSSION

The interdisciplinary re-employment programme did not have a positive influence on re-employment or physical or mental health among unemployed persons with common mental health problems. However, among persons who entered paid employment, physical health improved and anxiety and depressive symptoms decreased, whereas health remained unchanged among persons who continued to be unemployed.

During the 2-year follow-up period of the study, participation in paid employment increased from 10% to 26% among participants of the interdisciplinary programme, which was approximately the same (8 to 22%) for the regular programmes. After two years, 10% of the participants of the intervention programme worked fulltime, compared to 4% of the participants of the usual programmes. However, the statistical analysis could not demonstrate that these observed differences were statistically significant. Therefore, it is concluded that the interdisciplinary has no added value with regard to paid employment compared to the regular programmes. There are three possible reasons why the intervention was not effective: 1) the study could not demonstrate an effect due to methodological limitations, 2) the intervention was not successfully implemented, or 3) the intervention was indeed not effective in this form.

1. Methodological limitations.

   Because a randomised controlled design was not feasible, the propensity score method was used as an alternative research design to investigate the effectiveness of the interdisciplinary re-employment programme. Because allocation of persons to the intervention and control group was not random, differences between the intervention and control group existed. Based on the observed differences in sociodemographic characteristics and health, the propensity score was calculated. The goal of the propensity score method is to balance two non-equivalent groups on observed covariates to get more accurate estimates of the effects of a treatment. The likelihood of being exposed to an intervention given a set of covariates was estimated with logistic regression analysis and used for covariate adjustment in the analysis of the effect of the interdisciplinary programme. However, unobserved factors that may influence employment or health may have potentially biased the results.
   The probability of entering paid employment was low and the observed differences between the intervention and control group were small. Therefore, the absence of a statistically significant difference in labour force participation between the intervention and control group may be due to a lack of power.

2. The intervention was not successfully implemented

   A process evaluation was done to investigate the fidelity of the re-employment programme. Key elements of the interdisciplinary re-employment programme were 1) high integration of vocational and mental health services, 2) rapid job placement, 3) cognitive counselling, and 4) individual job search support. Integration of vocational and mental health services was enhanced by regular interdisciplinary meetings and mental health specialists working at the employment services. Cognitive counselling was done by the mental health professionals and individual job search support was provided by the employment specialists. However, the process evaluation showed that rapid job placement was not implemented very well, because this was taken care of by another department of the employment services. When participants were ‘ready to start with employment’ they were referred to another

department of the employment services. The employment professionals of that department were under high pressure to fill as much vacancies as possible. The unemployed persons with (an history of) mental health problems were substantially less likely to get a job offer due to this organisational structure and the way the professionals of the different departments were directed.

3. The intervention was indeed not effective in this form

   The interdisciplinary team predominantly focused on dealing with mental health or social problems before encouraging participants to quickly enter paid employment. This strategy is called the "train then place" method. However, different studies have provided evidence for another strategy, which is called the 'place then train' method: the Individual Placement and Support (IPS) approach for persons with severe mental health problems consists of rapid job placement and job-coaching in the new job.[21] This approach resulted in higher rates of competitive employment, fewer days to the first competitive job and more hours and weeks worked among persons with severe mental disorders.[22-24] However, evaluation studies of the IPS intervention were always done among persons with severe mental problems, whereas participants of the interdisciplinary re-employment programme had common mental disorders, such as anxiety or depression. In addition, participants of the IPS intervention were all motivated to seek work, which is an important predictor of entering paid employment.[27]
   In the current study, attitude towards work was not an inclusion criteria for participation in the interdisciplinary re-employment programme, since all participants were on social benefits with the requirement that they are available for paid employment. This may partly explain the lower proportion of participants of the interdisciplinary re-employment programme entering paid employment compared to the IPS intervention. Another important element of the IPS intervention is the time-investment of the employment specialist to build up a network of employer who are willing to accept participants with health problems into their company. In the current study, employment specialists of the interdisciplinary team were not allowed to build up a network of potential employers, because this was the responsibility of another department of the employment services. Therefore, the organisational structure may have limited the results with respect to entering paid employment.

The fact that most of the participants did not achieve the primary goal of entering paid employment may have had a negative influence on the mental health of participants. This may explain why the mental health of participants did not improve, despite the fact that they participated in cognitive counselling. However, among those persons who entered paid employment physical health improved and anxiety and depressive symptoms decreased. This was irrespective of their participation in the interdisciplinary or regular programmes.

Societal context of the study
The study was undertaken in the years 2011-2014 during a strong recession in the Netherlands with growing unemployment. Due to the economic situation, there were less opportunities to gain work for unemployed persons in general. It may have been especially difficult for unemployed persons with health problems to be considered for the few available jobs.
Thus, unemployed persons with health problems may have considered it not very encouraging to apply for vacancies with a high competition of other applicants with a favourable labour market position.

Due to the social security regulations in the Netherlands, entering part-time paid employment does not always result in a sufficient income that enables the person to be no longer dependent on (additional) benefit. In most situations, entering a part-time job will not result in an increase of personal income as income from paid employment will be deducted from the social benefit. The administrative burden for workers is very high, especially when the job is temporary or has irregular hours. Therefore, the financial incentive to enter paid employment is lacking when employment of at least 32 hours is not possible.

Limitations of the study

Different strategies were undertaken to improve the response to the questionnaires. The initial response to the postal questionnaire was low (approximately 29%). Therefore, additional action were undertaken to increase the response. An independent researcher provided help with with filling in the questionnaire at the Employment Center or at their home address. This resulted in a total response of approximately 50% of the first questionnaire. Taken into account the characteristics of the study population this is a fair response.

Another limitation of the study was the large variation in content and activities of the interdisciplinary re-employment programme. A review showed that challenges of complex interventions include the standardisation of interventions, the impact of people involved and the organisational context of implementation.[38] Therefore, it is difficult to characterize specific components that contributed to positive outcomes.

In conclusion

The interdisciplinary re-employment programme did not have a positive influence on re-employment or physical or mental health among unemployed persons with health problems. However, among persons who entered paid employment, physical health improved and anxiety and depressive symptoms decreased, whereas among persons who continued to be unemployed health remained unchanged. Policies to improve population health should take into account that promoting paid employment may be an effective intervention to improve health.
Inclusion of unemployed persons with common mental health problems in the workforce through re-employment programs is an important strategy to improve their health. It is recommended to include rapid job placement and coaching on the job (first place then train method) as part of an interdisciplinary re-employment programme. In addition, it is of paramount importance to take into account the needs of employers and invest in building a network of potential employers, as part of the re-employment process of unemployed persons with mental health problems.

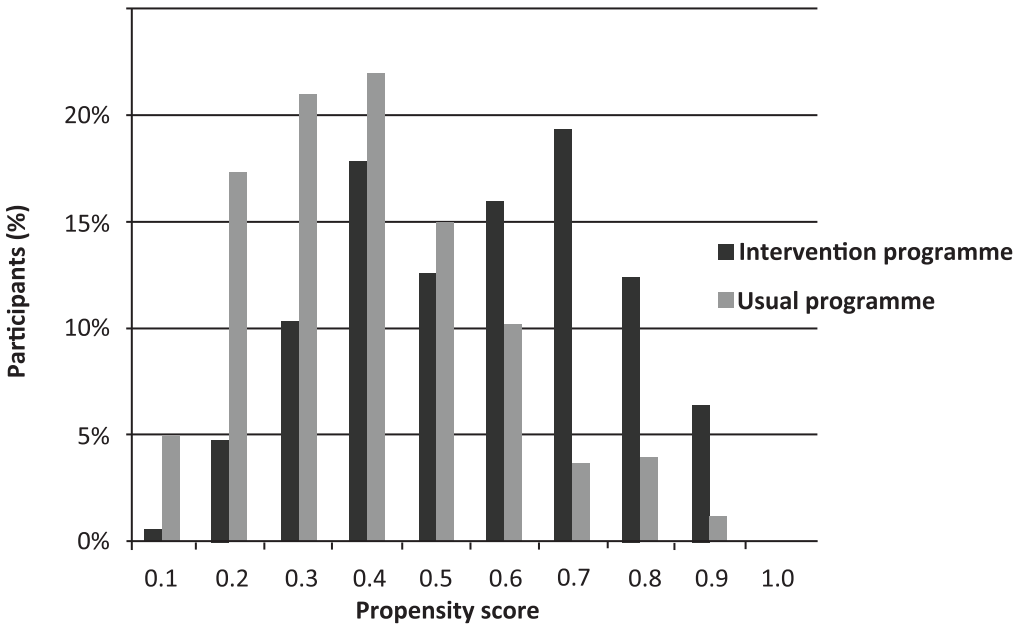

Figure 2 Distribution of the predicted probability of treatment assignment (propensity score) to the intervention programme and usual programme

Ethical approval

All procedures performed in the study involving human participation were in accordance with the ethical standards of the Medical Ethics Committee of the University Medical Center Rotterdam Erasmus MC.

Additional table 1 Imputation of missing values

	Original data			Missing%	Imputed data		
	ExiT	Ref	Total	Total	ExiT	Ref	Total
Age (mean, sd)	186	255	441	0	186	255	441
Sex (women)	186	255	441	0	186	255	441
Education - low - intermediate / high	180	236	416	5.7	186	255	441
Married/living with partner	176	241	417	5.4	186	255	441
Children	176	241	417	5.4	186	255	441
Ethnicity - Native Dutch - Turkish/Moroccan - Surinamese/Antillean - Other	179	244	423	4.1	186	255	441
Unemployment duration <1 year 1-5 years >5 years or never worked	179	245	424	3.9	186	255	441
Dutch language skills (poor)	175	242	417	5.4	186	255	441
Physical health (0-100) (higher is better)	184	252	436	1.1	186	255	441
Mental health (0-100) (higher is better)	184	248	432	2.0	186	255	441
Anxiety and depressive symptoms (10-50) High is more symptoms	173	229	402	8.8	186	255	441
Mastery (6-18) (higher is better)	170	233	403	8.6	186	255	441
Self-esteem (10-40) (higher is better)	166	227	393	10.9	186	255	441
Attitude towards work (0-10) (higher is better)	171	227	398	9.8	186	255	441
Fulltime paid employment (≥36 hours/week)	164	218	382	13.4	186	255	441
Parttime paid employment (12-35 hours/week)	164	218	382	13.4	186	255	441
Paid employment (any hours) (>0 hours per week)	164	218	382	13.4	186	255	441
Voluntary work (at least once a month)	176	242	418	5.2	186	255	441

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Work as treatment? The effectiveness of re-employment programmes for unemployed persons with severe mental health problems on health and quality of life: a systematic review and meta-analysis

6

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ABSTRACT

Objective: Given the importance of unemployment in health inequalities, re-employment of unemployed persons into paid employment may be a powerful intervention to increase population health. It is suggested that integrated programmes of vocational re-integration with health promotion may improve the likelihood of entering paid employment of long-term unemployed persons with severe mental health problems. However, the current evidence whether entering paid employment of this population will contribute to a reduction in health problems remains unambiguous. This systematic review and meta-analysis aimed to assess the effects of re-employment programmes with regard to health and quality of life.

Methods: Three electronic databases were searched (up to March 2015). Two reviewers independently selected articles and assessed the risk of bias on pre-specified criteria. Measures of effects were pooled and random effect meta-analysis of randomised controlled trials was conducted, where possible.

Results: Sixteen studies were included. Nine studies described functioning as outcome measure. Five studies with six comparisons provided enough information to calculate a pooled effect size of -0.01 (95% CI -0.13- 0.11). Fifteen studies presented mental health as outcome measure of which six with comparable psychiatric symptoms resulted in a pooled effect size of 0.20 (95% CI -0.23-0.62). Thirteen studies described quality of life as outcome measure. Seven of these studies, describing eight comparisons, provided enough information to calculate a pooled effect size of 0.28 (95% CI 0.04-0.52).

Conclusions: Re-employment programmes has a modest positive effect on quality of life. No evidence was found for any effect of these re-employment programmes on functioning and mental health.

What this paper adds

- Unemployment is a major cause of socio-economic health inequalities. Prolonged periods of unemployment may lead to poor health, which in turn will reduce the probability of re-employment.
- Observational studies have provided ample evidence that entering paid employment can improve health. However, the evidence from experimental studies for effectiveness on health-related outcomes is scarce.
- There is a need to summarize the available evidence on the effectiveness of re-employment programmes for health and to estimate the magnitude of these health benefits.
- Re-employment programmes based on the place-then-train model had a positive effect on quality of life. However, there is no evidence for benefits concerning mental health and functioning.
- Paid employment can be seen as therapeutic intervention and can contribute to reduce socioeconomic health inequalities.

INTRODUCTION

Unemployment is a major cause of socio-economic health inequalities. Prolonged periods of unemployment are associated with an increased risk of all-cause mortality of 63%[1], an 80% increased risk of fatal and non-fatal cardiovascular events[2], a twofold risk of experiencing a limiting illness[3], and a 3.5% increased prevalence of poor mental health.[4] Whether unemployment will also lead to the onset or aggravation of severe mental disorders remains unclear. However, unemployment rates among persons with severe mental disorders, e.g. schizophrenia, are high (80-90%).[5] Besides, unemployed has been associated with a two-fold increased prevalence of smoking[6, 7] and a 1.5 times increased prevalence of excessive alcohol use.[7] Thus, unemployment may lead to poor health, which in turn will reduce the probability of re-employment.[8-10]
Observational studies have provided ample evidence that entering paid employment can improve health. A meta-analysis of 15 longitudinal studies showed significant improvements in mental health (effect size 0.89), life satisfaction (effect size 3.04), and in subjective physical health (effect size 0.38) among workers who re-entered paid employment.[11] Another systematic review of 33 prospective studies showed that entering paid employment reduced the risk of depression (OR 0.52; 95%CI 0.33-0.83) and improved general mental health (OR3.8 and effect size 0.66).[12]
A recent systematic review of Luciano et al. showed that entering paid employment was associated with decreased psychiatric treatment and increased self-esteem.[13] These results from observational studies are reflected in the powerful message of the so-called Black report on the health of Britain's working-age population: "Work, matched to one's knowledge and skills and undertaken in a safe, healthy environment, can reverse the harmful effects of prolonged sickness or long term unemployment, and promote health, well-being and prosperity".[14]
Re-employment of unemployed persons may be a powerful intervention to reduce health inequalities. Crowther et al. showed in their meta-analysis of randomised controlled trials (RCTs) that people with severe mental illness who received supported employment were more likely to be in competitive employment than those enrolled in a conventional training-placement programme with 34% versus 12% in paid employment after 1 year, respectively.[15] A recent systematic review reported that those who received supported employment were more likely to be in competitive employment (52-60%) compared to control conditions (23% to 30%).[16]
These systematic reviews show that intervention studies have focused on effectiveness for vocational outcomes, such as entering paid employment, hours of paid work per month, and income received. The evidence for effectiveness on health-related outcomes is scarce. Two RCTs have reported positive effects such as 4% higher quality of life score[17] and 38% reduced healthcare costs.[18] However, another RCT on employment interventions did not find any beneficial effects on health or health care costs.[15] Hence, the current evidence whether entering paid employment of unemployed persons with severe mental health problems will contribute to a reduction in health problems remains unambiguous. Therefore, our aim was to provide a systematic literature review on the effectiveness of re-employment programmes for health and to estimate in a meta-analysis the magnitude of these health benefits.

MATERIALS AND METHODS

Literature search

This systematic review was conducted according to the PRISMA checklist.[19] Comprehensive literature searches were conducted by the first author (RMvR) in Medline, Embase and PsycInfo (to March 2015). The full search strategy is presented in appendix I.
Based on title and abstract, two reviewers (RMvR, MS) selected the articles for full text appraisal and final inclusion. Each article had to fulfil all of the following criteria: I) participants were unemployed, aged between 18 and 65 years, and had mental health problems, II) the intervention must consist of a form of job placement (e.g. competitive employment, sheltered employment), III) the study design was a randomized controlled trial, IV) the outcome measures must be health related (e.g. physical health, mental health, health status), and V) the article was published in a peer reviewed scientific journal and written in English. A consensus method was used to resolve disagreements. The references of all included studies were checked for other possibly relevant articles.

Assessment of risk of bias in included studies

Two reviewers (RMvR, BEC) independently assessed risk of bias of the included studies using the Cochrane collaboration's tool for assessing risk of bias.[20] We added one item (10b) concerning fidelity to the methodology of the intervention (appendix I). Each item was rated as low, high, or unclear risk of bias. Disagreements were resolved in a consensus meeting.

Data extraction

Relevant information was collected on the characteristics of the study population (e.g. age, gender, sample size, health problems), health outcomes (e.g. physical health, mental health, health status, etc.), intervention content, and proportion of persons in competitive employment within the period of intervention. The core findings in each article were expressed by effect sizes. Where possible, these effect sizes were directly extracted from the original article. For articles in which this information was not presented, effect sizes were calculated using raw data.

Data analysis

The effect size was calculated in Review Manager version 5.3 with the Hedges' g approach, wherein the mean difference at follow-up is divided by the pooled weighted standard deviation (SD) at follow-up.[20] Unless otherwise indicated, a positive effect size indicated a beneficial effect of integrated programmes of vocational re-integration with health promotion concerning health outcome. We examined potential publication bias using funnel plots. The I2 statistics was used to determine the percentage of total variation across studies that is due to heterogeneity rather than chance.[21] Due to observed heterogeneity, we conducted random-effects meta-analyses on each independent health outcome (using Review Manager 5.3). The pooled effect sizes were calculated according to the Hedges' g approach which takes into account the size of the study and provides a weighted effect size. Finally, a meta-regression analysis was carried out to identify follow-up duration, mean difference of the percentage persons in competitive employment, proportion of male, and proportion of persons diagnosed with schizophrenia as potential determinant of the effect size.

RESULTS

Characteristics of the included studies

Our search of the literature resulted in 2091 potentially relevant articles. After title and abstract screening, 1302 articles were retrieved for full-text appraisal. Finally, 16 articles were included in the study (Figure 1). Exclusion of articles was mainly due to a lack of health outcome measures (n=42), the study design was not a randomized controlled trial (n=34) or absence of job placement within the intervention (n=21). Most of the included studies presented more than one outcome measure, which can be classified into: functioning (n=9), mental health (n=15), and quality of life (n=13) (appendix II).

In 12 out of 16 studies the intervention was Individual Placement and Support (IPS). IPS emphasizes integration of vocational and healthcare services, rapid job finding, obtaining competitive employment that corresponds with the clients preferences and clinical and rehabilitative needs, and follow-along support at the job.[22] Some studies used a derivate of IPS like Compensated Work Therapy (CWT)[23], Assertive Community Treatment with Individual Placement Support (Act-IPS)[24] or integrated supported employment combined with work-related social skills training.[25]

In all studies the control group received traditional vocational rehabilitation which consists of pre-employment training and medical care as usual. There is some variation between studies in the traditional vocational rehabilitation offered, but none of these programmes had competitive employment as their immediate goal.

Most studies defined competitive employment as a job in the open labour market that anyone could hold with a minimum wage or higher. Some studies used supplementary criteria like that the job was independently held with the participant in continuous employment for at least 30 days[18]; that fewer than 50% of the participant co-workers had disabilities[26]; and self-employment was also reckoned as competitive employment.[26] The funnel plots in Appendix I show that for none of the health outcomes there was an indication for publication bias.

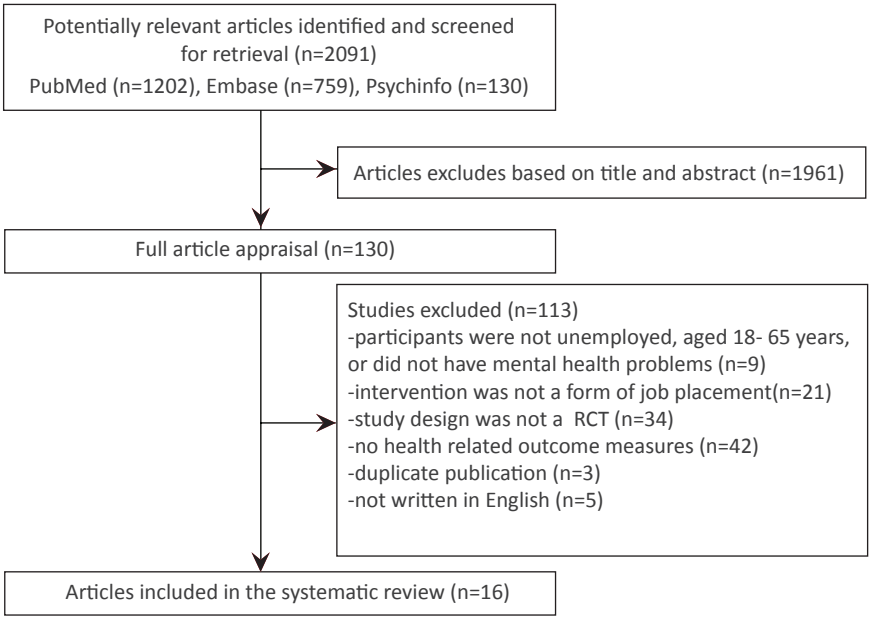

Figure 1. Flow chart of the included studies.

Assessment of risk of bias

Figure 2 shows the overall assessment of risk of bias. The initial agreement of the reviewers on the total assessment of risk of bias was 72% (146 of 204 items). All disagreements were solved in a consensus meeting. A high risk of bias was found with regard to blinding. In 8 studies (50%) blinding of participants and personnel and the outcome assessment was lacking. In 14 studies (75%) it was unclear whether co-interventions were avoided or that these were similar in the intervention group as well as the control group.

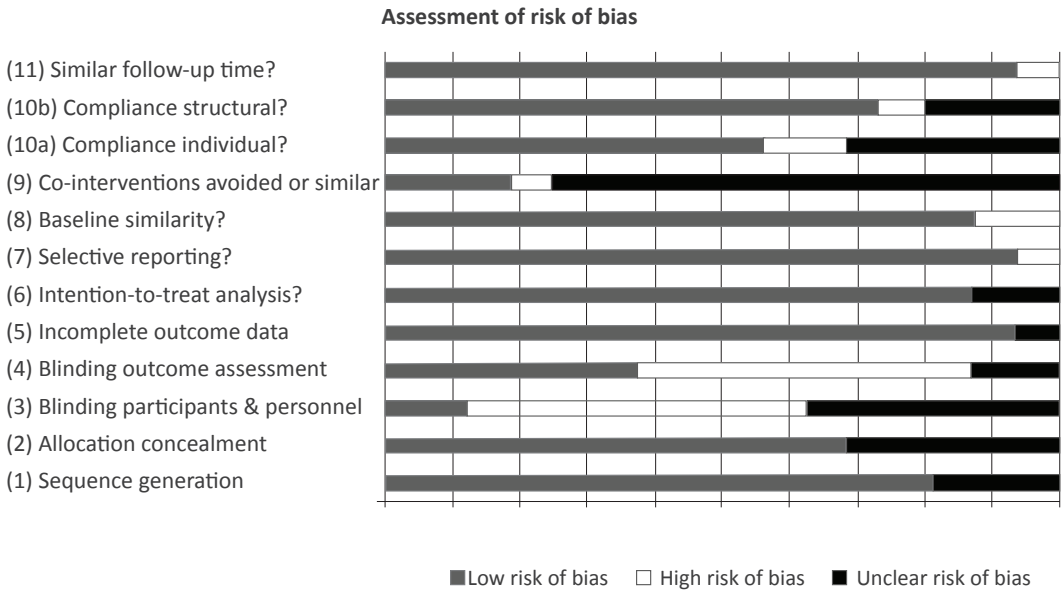

Figure 2. Assessment of risk of bias.

	Experimental			Control				Std. Mean Difference
Study or Subgroup	**Mean**	**SD**	**Total**	**Mean**	**SD**	**Total**	**Weight**	**IV, Random, 95% CI**
Burns 2009a (EU)	57.4	11.9	132	58.3	10.76	120	22.1%	-0.08 (-0.33,0.17)
Burns 2009b (EU)	57.6	11.94	132	56.6	10.45	120	22.1%	0.09 (-0.16,0.34)
Drake 1999 (USA)	45.8	1.43	74	46	1.78	76	13.2%	-0.12 (-0.44,0.20)
Helsin 2011 (UK)	56.1	16.4	93	56.8	18.7	95	16.5%	-0.04 (-0.33,0.25)
Hoffmann 2014 (Swiss)	55.2	9.1	46	55.3	9.1	54	8.7%	-0.01 (-0.40-0.38)
Howard 2010 (UK)	53.34	14.75	98	52.46	13.16	99	17.3%	0.06 (-0.22-0.34)
Total (95% CI)			**575**			**564**	**100.0%**	**-0.01 (-0.13,0.11)**

Heterogeneity: Tau^2 =0.00; Chi^2=1.69, df =5 (P=0.89);I^2 = 0%
Test for overall effect: Z = 0.18 (P=0.86)

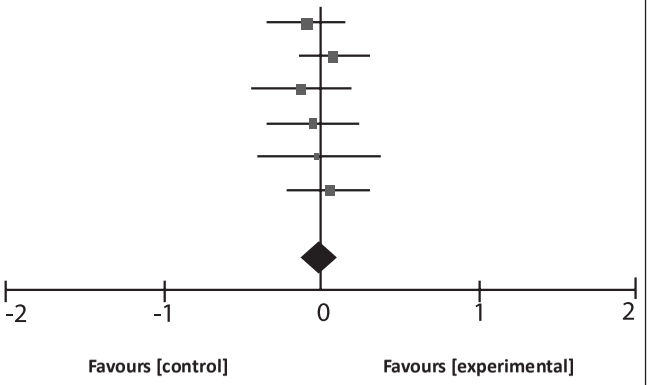

Figure 3. Forest plot of comparison between the intervention group (four studies with Individual Placement and Support, one study with Supported Employment) and control group regarding the outcome measure functioning

	Experimental			Control				Std. Mean Difference
Study or Subgroup	**Mean**	**SD**	**Total**	**Mean**	**SD**	**Total**	**Weight**	**IV, Random, 95% CI**
Burns 2009 (EU)	29.3	7.8	132	28.9	7.9	120	17.2	0.05 (-0.20, 0.300
Drake 1999 (USA)	39.2	1.2	74	41.1	1.5	76	16.2	-1.39 (-1.75, -1.03)
Helsin 2011 (UK)	35.5	3.5	93	34.9	4.1	95	16.9	0.16 (-0.13, 0.44)
Hoffmann 2014 (Swiss)	23.4	5.2	46	21.7	4.5	54	15.8	0.35 (-0.05, 0.75)
Howard 2010 (UK)	36.3	3.8	98	37	3.5	99	17.0	-0.19 (-0.47- 0.09)
Kukla 2013 (USA)	59.9	16	92	63	19.2	95	16.9	-0.17 (-0.46-0.11)
Total (95% CI)			**535**			**539**	**100.0%**	**-0.20 (-0.62, 0.23)**

Heterogeneity: Tau^2 =0.26; Chi^2=59.30, df =5 (P < 0.000001);I^2 = 92%
Test for overall effect: Z = 0.91 (P=0.36)

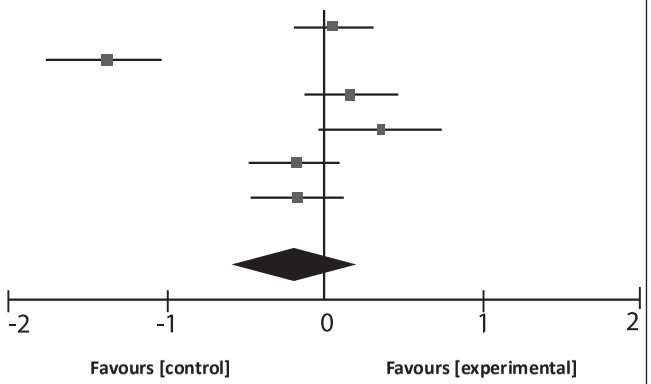

Figure 4. Forest plot of comparison between the intervention group (five studies with Individual Placement and Support, one study with Supported Employment) and control group regarding the outcome measure mental health.
A negative effect size means reduced symptoms.

Functioning

Nine studies described functioning as outcome measure (appendix II).[17, 18, 23, 26-31] Functioning was measured using validated scales like Global Assessment of Functioning (GAF)[17, 18, 26-31], and Short-Form health survey (SF-36).[23] Five studies, describing six comparisons, provided enough information to calculate effect sizes, ranging from -0.12 to 0.09, all not statistically significant (Figure 3).[17,18, 27, 29, 30] The pooled effect size was -0.01 (95%CI -0.13-0.11). Within these studies the percentage of competitive employed ranged from 13%-55% in the intervention groups compared to 6%-28% in the control groups. The meta-regression analysis showed no influence of study characteristics on the effect size of functioning.

Mental health

Fifteen studies described mental health as outcome measure (appendix II).[17, 18, 23-35] Mental health is the umbrella term for outcomes measured with the Positive and Negative Syndrome Scale (PANSS), Hospital Anxiety and Depression Scale (HADS), Rosenberg self-esteem scale, Brief P sychiatric Rating Scale (BPRS), and Chinese General Self-efficacy Scale (CGSS). One study described a significant difference in self-efficacy in favour of the intervention group.[25] Six studies, describing twelve comparisons, provided enough information to calculate effect sizes ranging from -0.58 to 1.39.[17, 18, 25, 27, 30, 34] Six studies measured psychiatric symptoms and the pooled effect size was 0.20 (95%CI -0.23-0.62)(Figure 4).[17, 18, 27, 29, 30, 34] Within these studies the percentage of competitive employment ranged from 13%-55% in the intervention groups compared to 2%-28% in the control groups. The meta-regression analysis showed that studies with over 50% of male participants had a lower effect size of mental health (β -1.43, 95% CI -2.12; -0.74).

Quality of life

Thirteen studies described quality of life as outcome measure.[17, 18, 24-28, 31-34, 36, 37] Quality of life was measured using validated scales like Manchester Short Assessment of Quality of Life (MANSA)[18, 32, 35], Lancashire Quality of Life Profile[27], Lehman's Quality of life interview[17, 24, 28, 31, 34], Wisconsin Quality of Life Index[26, 36], or World Health Organization Quality of Life Measure.[33] Seven studies, describing eight comparisons, provided enough information to calculate effect sizes, ranging from 0.00 to 0.99[17, 18, 25, 27, 32, 34, 36] with a pooled effect size of 0.28 (95% CI 0.04-0.52)(Figure 5) Within these studies the percentage of competitive employment ranged from 13%-74% in the intervention groups compared to 2%-68% in the control groups. The meta-regression analysis showed no influence of the study characteristics on the effect size of quality of life.

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Areberg 2013 (Sweden)	54	8.5	37	51.8	9.3	46	11.0%	0.24 (-0.19, 0.68)
Burns 2009 (EU)	4.7	0.8	132	4.7	0.9	120	14.6%	0.00 (-0.25, 0.25)
Drake 1999 (USA)	5	0.2	74	4.8	0.2	76	12.8%	0.99 (0.66, 1.33)
Hoffmann 2014 (Swiss)	6.9	1.3	39	6.2	2	49	11.2%	0.40 (-0.02,0.83)
Howard 2010 (UK)	4.1	0.8	98	4	0.9	99	14.0%	0.12 (-0.16,0.40)
Kukla 2013 (USA)	4.7	1.5	92	4.7	1.5	95	13.9%	0.00 (-0.29, 0.29)
Tsang 2010a (Hong Kong)	4.9	1.6	41	4.6	2.1	44	11.2%	0.16 (-0.27, 0.58)
Tsang 2010b (Hong Kong)	5.4	1.7	44	4.6	2.1	44	11.3%	0.42 (-0.01, 0,84)
Total (95% CI)			**575**			**573**	**100.0%**	**0.28 (0.04, 0.52)**

Heterogeneity: Tau^2 =0.09; Chi^2=27.36, df =7 (P=0.0003);I^2 = 74%
Test for overall effect: Z = 2.29 (P=0.02)

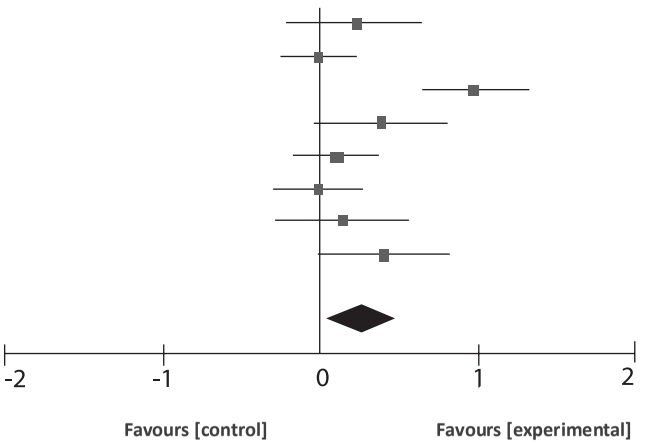

Figure 5. Forest plot of comparison between the intervention group (six studies with Individual Placement and Support, one study with Supported Employment) and control group regarding the outcome measure quality of life.

DISCUSSION

This systematic review showed some indications that re-employment programmes based on the place-then-train model had a positive effect on quality of life with a pooled effect size of 0.28 (95% CI 0.04-0.52). However, there is no evidence for benefits concerning mental health and functioning.

These results seem to partly contradict observational studies that have provided evidence that entering paid employment can improve health[9] and decrease psychiatric treatment.[13] Mueser and colleagues[37] as well as Bond and colleagues[38] showed in their RCTs that after 18 months follow-up subjects with severe mental illness who obtained competitive employment tended to have less psychiatric symptoms, better overall functioning, and higher self-esteem.

In the current systematic review we could not demonstrate that entering paid employment of unemployed persons with severe mental health problems had a substantial impact on health status. The estimated pooled effect sizes were small and reflect modest clinically important differences. A few explanations can be discussed for the contrasting results between experimental and observational studies. First of all, observational studies present their effects between the group who became employed and the group who stayed unemployed. In a RCT setting this would imply a comparison between 100% work resumption in the intervention group compared to 0% work resumption in the control group. However, in the studies in this review the percentage of subjects in competitive employment ranged from 13%-74% in the intervention group compared to 2%-68% in the control group. In our secondary analysis a larger difference in proportion of subjects who gained paid employment between intervention and control group was not associated with higher effect size, although the number of studies available for this analysis was limited.

Secondly, RCTs were generally conducted in small study populations typically varying from 37 to 132 persons per study arm, whereas observational studies investigated much larger populations. The modest sample size makes it difficult to demonstrate differences between groups especially with regard to health outcomes. In addition, participants were followed-up for a relatively short-term (range 12-24 months) with few measurements compared to observational studies (range 1-15 years), which makes it difficult to determine the influence of work resumption on sustainability of (possible) health effects. In many RCTs health outcomes were frequently presented as secondary outcomes, or were absent. Therefore, the studies were not primarily designed for demonstrating differences concerning health outcomes. Besides, in some studies health was measured by presence and severity of (chronic) health problems. During follow-up the presence of (chronic) health problems will not change in many cases, whereas the individuals resilience and capacity to cope and to adapt according to health problems may change. Consequently, within vocational rehabilitation outcome measures of health should reflect “health, as the ability to adapt and to self-manage”.[39] Last, observational studies are susceptible for selection bias, whereas randomization in RCTs ensures that prognostic factors are equally distributed across intervention and control group. In observational studies the healthy worker effect may have occurred, whereby healthier persons are more likely to enter paid employment and remain employed than persons with health problems. As a result the findings of observational studies may be overestimated.

In addition to these methodological issues, the year of conducting studies and policies on national level concerning social protection may influence the association between employment and health. A prospective study of Martikainen and Valkonen, for example, found that the asso-

ciation between unemployment and mortality weakened in periods with increasing unemployment rates.[40] Furthermore, in countries with policies securing a high level of social protection the impact of job loss on workers' health was less compared to countries with limited social protection. McLeod and colleagues determined that the unemployment-mortality association was much stronger in the US (low level of social protection) than in Germany (high level of social protection).[41]

There is considerable evidence that there is a fundamental link between health and socio-economic indicators such as educational qualifications, job status, and income. As a result, health inequalities often go hand-in-hand with other socio-economic inequalities.[14] For example, unemployed persons have a higher mortality and more often experience diseases with functional limitations.[8, 42] Inclusion of unemployed persons in the workforce through re-employment programmes is therefore an important strategy to reduce socioeconomic inequalities.

The effect sizes found in this systematic review are comparable to many preventive interventions on improvement of unhealthy behaviour. For example, a recent meta-analysis of 18 studies on the effectiveness of workplace health promotion programmes showed an effect for self-perceived health with an effect size of 0.23 (95%CI 0.13-0.33).[43] Fortunately, the awareness about the importance of employment for health is certainly increasing, as reflected in the rapidly growing amount of research on this topic and by the policies developed in different countries to integrate health services with employment services. However, one of the challenges is to improve the health- and work related knowledge of the primary care workforce, as they are the gate-keepers to specialist medical care and key-actors in preventing labour market exclusion.[44]

Shortcomings in the risk of bias assessment were found with regard to blinding of participants, personnel and the outcome assessment, and indistinctness whether co-interventions were avoided or not. Knowledge of group assignment by participants and outcome assessors can affect the subjective health related outcomes reported in most studies. Participants who know that they are allocated to the intervention group may be more inclined to report a positive effect. Besides, if personnel is not blinded their attitudes for or against the intervention can be transferred to the participant.[20, 45] Furthermore, the lack of information on co-interventions makes it difficult to establish whether the effects reported are the result of the evaluated intervention or not.

This systematic review shows indications that re-employment programmes based on the place-than-train model have some effect on quality of life of participants, but the effect size is modest. The current systematic review highlights two important challenges for the future. First, policy makers and health care providers must be aware that paid employment can be seen as therapeutic intervention and can contribute to reduce socioeconomic health inequalities. That's why knowledge of professionals on this topic needs to be improved. Second, research should focus on establishing the effectiveness of re-employment programmes based on the place-and-train model with regard to health by conducting RCTs with a larger sample size, with health outcomes as their primary outcome measure, and with a longer follow-up periods.

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General discussion

7

MAIN FINDINGS

The three research goals of this thesis will be addressed in the sections below, combining findings from all chapters.

1. To study the influence of health and cognitions on re-employment among long-term unemployed persons

   The studies described in chapter 2 and chapter 3 showed the importance of job-search motivations and cognitions in the mechanism underlying the negative influence of poor health on re-employment. Among long-term unemployed persons in the Netherlands the most important factors accountable for remaining unemployed appeared to be older age (>55 years), poor perceived health, and lack of willingness to accept a job. Persons with a poor health were 4 times more likely to remain unemployed compared to persons in good health.(chapter 2) However, also motivational and intentional factors in seeking and accepting a job showed great importance, as persons with low willingness to take up work were 3 times more likely to remain unemployed.(chapter 2) In another study of unemployed persons receiving social security benefits, similar results were demonstrated.(chapter 3) In addition, this study showed that search behavior, job-search cognitions and coping resources played an important role in the mechanism underlying the adverse effect of poor health on re-employment. Poor health negatively influenced job-search cognitions and coping resources, which in turn resulted in less active job-search behavior and lower likelihood to gain paid employment. Adjustment for job-search cognitions and coping resources reduced the influence of poor health on active search behavior by 50%, and on re-employment by 33%. Health-related differences in job-search behavior and re-employment can be partly explained by differences in coping, job-search attitude, self-efficacy, and subjective norms towards job-search behavior.(chapter 3) In conclusion, poor health negatively influences re-employment and is associated with risk factors for remaining long-term unemployed, such as passive job-search behavior, negative job-search cognitions and low coping resources.

2. To study the effect of entering paid employment on health among unemployed persons

   The follow-up study among unemployed persons receiving social benefits in chapter 4 showed that persons who entered paid employment were three times more likely to have a good health status after the transition into paid employment. Persons who entered paid employment were also 1.76 times more likely to improve from a poor to good quality of life after entering paid employment, compared with those who continued to be unemployed. In addition, for every month in paid employment after re-employment, the likelihood of changing towards a good quality of life increased with 1.12. The effect of re-employment on self-rated health and quality of life was more profound among younger persons compared to older persons.(chapter 4) Participants of a re-employment program (chapter 5) who entered paid work showed better physical health and less anxiety and depressive symptoms at follow-up compared to those who stayed unemployed. In conclusion, entering paid employment had a positive effect on general health, physical health and psychological problems and a monthly improvement of quality of life after re-employment was demonstrated.

3. To evaluate the effectiveness of re-employment interventions on health, social participation and paid work for unemployed persons with mental health problems

   Chapter 5 describes the evaluation of an interdisciplinary re-employment program for persons with mental health problems. The interdisciplinary re-employment program, in which employment specialists as well as mental health specialists work together in interdisciplinary teams, showed no added value compared to the regular re-employment programs. A positive change in paid employment (+4-10%) and voluntary work (+14-16%) was found among participants of the interdisciplinary as well as the regular re-employment program. In addition, the interdisciplinary re-employment program did not improve mental or physical health more than the regular re-employment program. The systematic review and meta-analysis (chapter 6), which included sixteen studies, showed some indications that re-employment programs based on the place-then-train model had a positive effect on quality of life with a pooled effect size of 0.28 (95% CI 0.04 to 0.52). In conclusion, among persons with mental health problems, (health related) quality of life is positively influenced by job placement as part of programs which integrate health services with employment services.

Interpretations and new insights

A selection of key insights from this thesis is more thoroughly described below. First, the prominent adverse influence of poor health on job search cognitions, coping resources, and willingness to accept work. Second, the positive influences of re-employment on self-rated health among unemployed persons is further explored. Third, the usefulness of propensity score techniques is discussed, as alternative strategy for an RCT in the evaluation of the effects of re-integration programs.

1. Poor health has a prominent adverse influence on job search cognitions, coping resources, and willingness to accept work

   Poor health has a direct adverse influence on re-employment. The findings in this thesis show that poor health also has an adverse influence on job search cognitions, coping resources, and willingness to accept work. Therefore, health also indirectly influences re-employment. The indirect effect of poor health on re-employment through cognitive and coping factors was 33%. (chapter 3) The results of this thesis suggest considering the interplay of health with cognitive and coping factors when designing reintegration programs. During the job search of unemployed persons their coaches should focus on abilities to cope with problems in health and functioning.
   Our research adds to the literature as it explains how health problems can be targeted in re-employment programs by addressing strategies to overcome health as a barrier for re-employment. There is compelling evidence that rapid placement in paid employment and thereafter support to address health barriers in performing the tasks and activities required in a job is an effective approach, for example in the Individual Placement and Support programs.[1, 2] The new insights help to specify which cognitions should be targeted in re-employment interventions and what kind of support to address health barriers is required during the job-search process. The following intervention studies confirm our findings.

First, a study of the JOBS intervention demonstrated the mediating effects of a sense of mastery and inoculation against setbacks as active ingredients in an intervention for unemployed job seekers.
The delivery process of the JOBS training maximizes active learning processes, as opposed to didactic passive teaching techniques. The active learning process involves the group members engaging in cooperative tasks aimed at identifying the problems facing job seekers, generating critical information relevant to the problems, suggesting appropriate coping courses of action, selecting the actions personally suitable for them, and role playing to practice the implementation of the selected action plans.[3] By successfully adapting activities to an illness, people are able to work or to participate in social activities and feel healthy despite limitations.[4] Second some studies show cognitive behavioral therapy for unemployed persons before re-entering the workforce increased their ability to cope with existing health problems and subsequently improved the likelihood to return to paid employment.[5]

2. Self-rated health and quality of life improves after entering paid employment

   This thesis highlights that re-employment improves general health and quality of life. Consequently, improving possibilities for unemployed persons to find paid employment will have a positive effect on population health. Chapter 4 shows that re-employment had a positive effect on self-rated health and a monthly improvement after re-employment was demonstrated. In addition, chapter 5 showed that physical health improved and psychological problems decreased among those who entered paid employment. However, evidence for the beneficial effect of entering paid employment on self-rated health was not found in the meta-analysis of randomized controlled trials of employment programs.(chapter 6)
   In the RCTs, the effect of employment programs on health was investigated among all participants of the employment program, whereas only a minority of the participants successfully started with paid employment. Subgroup analyses should be done to investigate the health change among participants who entered paid employment. In addition, in some RCTs health was measured as the presence of chronic diseases, which is not sensitive to change in time. As stated earlier, re-employment programs or re-employment itself may positively influence an individual's resilience and capacity to cope with health problems. Effect evaluations of re-employment programs should always be accompanied by an evaluation of perceived health and capacity to cope with health problems.

3. In evaluation of the effects of re-integration programs on re-entering paid employment, propensity score techniques offer a useful alternative strategy for an RCT

   Our research contributes to knowledge about the propensity score method as suitable research method to study of the effects of re-integration programs on starting paid employment. Due to practical and ethical reasons, a randomized controlled trial to evaluate the effects of re-integration programs on re-entering paid employment and health, is not always possible.(chapter 5 and 6) The propensity score method is a statistical matching technique that can be applied to control for confounding in evaluation studies with observational data.[6] The main assumption is that all differences between treatment and control group are due to observable characteristics. Hence, the propensity score adjusts for imbalance in observed characteristics and, consequently, provides a valid estimate of the treatment effect.
   The disadvantage of the propensity score method is the possible confounding by unknown prognostic factors, which cannot be formally evaluated and tested.[7] The evaluation study

described in chapter 5 used the propensity score technique. It illustrates that observational information on participants in re-integration programs and subsequent re-employment can be used to provide evidence-based information on the effectiveness of re-integration programs.

RECOMMENDATIONS

Recommendations for researchers

1. *It is essential to measure health effect of re-employment interventions, using a broad definition as "the capacity to cope with and to adapt according to their health problems",*

   Re-employment programs or re-employment itself may positively influence an individual's resilience and capacity to cope with health problems. Effect evaluations of re-employment programs should always be accompanied by an evaluation of perceived health and capacity to cope with health problems. When a minority of the participants of a re-employment program successfully enters paid employment, it is important to perform subgroup analyses to investigate changes in health among participants who entered paid employment.

2. *The dynamic interrelation between poor health and job search behavior should be unraveled in order to design better re-integration programs*

   Poor health negatively influences re-employment and is associated with risk factors for remaining long-term unemployed, such as passive job-search behavior, negative job-search cognitions and low coping resources. One of the challenges is to extent the knowledge on the influence of the interplay of health and cognitive factors on re-employment in the different populations and in different circumstances. For example, increasing the intensity of job-search behavior seems to be particularly important among unemployed persons with less re-employment possibilities (chapter 2).

3. *New study designs and methods are required to evaluate the effectiveness of re-integration*

   Alternative research designs for the evaluation of re-employment programs in an quasi-experimental setting should be further developed. The propensity score method was used to evaluate the effectiveness of a re-employment program with observational data in which the assignment to the experimental condition was not under the researchers' control. Another promising approach which should be further developed is the comparative effectiveness research. First a prognostic model is developed based on a large longitudinal dataset of unemployed persons with information about socio-demographic characteristics, health and employment history. Secondly, the observed number of persons enrolled in a particular program that entered paid employment is compared with the estimated number of re-employed persons based on the developed prognostic model. Evidence for the beneficial effect of the re-employment program is provided when the observed number of re-employed persons is higher than the estimated number of re-employed persons. For this strategy to be successful it is of crucial importance that the registration of person-specific information is of high quality.

Recommendations for policymakers and healthcare providers

1. *Paid employment can be seen as a therapeutic intervention and can contribute to population health*

   The improvement of health among re-employed persons compared to the stable trend of health among persons who continued to be unemployed, provides evidence for a causal relation between re-employment and changes in health. Therefore, inclusion of unemployed persons in the workforce through re-employment programs is an important strategy to improve their health. In addition, the effect sizes of job-placement of persons with health problems, are comparable to those found in many preventive interventions on improvement of unhealthy behavior.[8] Knowledge of health care and employment professionals on this topic needs to be improved, as they are key actors in preventing labor market exclusion. This thesis showed that the effect of reemployment on self-rated health and quality of life is especially large for the younger age groups.(chapter 2) Efforts to include persons in the workforce should target specific groups, such as younger persons with health problems.

2. *Re-employment programs for persons with mental health problems should include human capital development as well as work first approaches.*

   Rapid job placement as part of an integrated approach of professionals from the mental health services as well as the employment services is recommended to promote re-employment of persons with mental health problems. These professionals should focus on the abilities to cope with problems in health and functioning of the unemployed, because by successfully adapting activities to an illness, people are able to work or to participate in social activities and feel healthy despite their limitations.[4]

3. *Patient-reported outcome measures are important to include in re-integration and re-employment registers*

   It is recommended to enhance the quality of registration of the outcomes of re-employment activities to get more insight in the effectiveness of these activities. More often researchers use methods whereby observational studies based on registry information become acceptable tools for effect evaluations. Such approaches are especially important in this field of participation and re-employment where registered data is available on a large scale, and where properly designed and conducted RCTs probably will become rare. Information about personal characteristics and transitions in- and out paid employment should be registered systematically by the employment professionals of the municipalities. In addition, patient-reported outcome measures (routinely collected short questionnaires) could be used to get insight in the quality of the employment services. High quality registration is important to be able to monitor and improve the effectiveness of the employment services.

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Summery/ samenvatting
Dankwoord
Curriculum Vitae
List of publications

SUMMARY/ SAMENVATTING

Summary

Unemployed persons have poorer health compared to employed persons. Also, persons with a poor health are less likely to enter the workforce than healthy persons. So, more insight is needed in determinants of re-employment and effective re-employment programs for unemployed persons with health problems. The three research goals of this thesis will be addressed in the sections below, combining findings from all chapters.

1. To study the influence of health and cognitions on re-employment among long-term unemployed persons.
2. To study the relation between re-entering paid employment and health of unemployed persons.
3. To study the effectiveness of re-employment intervention s on health, social participation and re-employment of persons with mental health problems.

- To study the influence of health and cognitions on re-employment among long-term unemployed persons.

Chapter 2 showed the most important factors accountable for remaining unemployed among long-term unemployed persons in the Netherlands. These factors were older age (>55 years), poor perceived health and willingness to accept a job. Persons with a poor health were 4 times more likely to remain unemployed compared to persons in good health. In addition, motivational and intentional factors in seeking and accepting a job showed great importance, as persons with low willingness to take up work were 3 times more likely to remain unemployed. Subgroup analyses showed that low educated persons were more likely to remain unemployed in the group receiving unemployment benefits and low self-reliance predicted long-term unemployment in the group receiving social security benefits.
We also analyzed determinants of job-search behavior and re-employment in another study of unemployed persons receiving social security benefits in Rotterdam (chapter 3). This study showed that search behavior, job-search cognitions and coping resources played an important role in the mechanisms underlying the negative influence of poor health on re-employment. Poor health negatively influenced job-search cognitions and coping resources, which in turn resulted in less active job-search behavior and lower likelihood to gain paid employment. Adjustment for job-search cognitions and coping resources reduced the influence of poor health on active search behavior by 50%, and on re-employment by 33%. Health-related differences in job-search behavior and re-employment can be partly explained by differences in coping, job-search attitude, self-efficacy, and subjective norms towards job-search behavior. (chapter 3)

- To study the effect of entering paid employment on health of unemployed persons

The follow-up study among unemployed persons receiving social benefits, described in chapter 4, showed that persons who entered paid employment were 3 times more likely to have a good health status after the transition into paid employment. Persons who entered paid employment were also 1.76 times more likely to improve from a poor to good quality of life after entering paid employment, compared with those who continued to be unemployed. In addition, for every month in paid employment after re-employment, the likelihood of a good quality of life increased

with 1.12.(chapter 4) Also, participants of a re-employment program (chapter 5) who entered paid work showed better physical health and less anxiety and depressive symptoms at follow-up compared to those who stayed unemployed. In conclusion, entering paid employment had a positive effect on general health, physical health and psychological problems and a monthly improvement of quality of life after re-employment was demonstrated.

- To evaluate the effectiveness of re-employment interventions on health, social participation and paid work for unemployed persons with mental health problems

Chapter 5 describes the evaluation of an interdisciplinary reemployment program for persons with mental health problems. The interdisciplinary reemployment program, in which employment specialists as well as mental health specialists worked together in interdisciplinary teams, showed no added value compared to the regular re-employment programs. In addition, the interdisciplinary re-employment program did not improve mental or physical health more than the regular re-employment program. However, among persons who entered paid employment, physical health improved (+16%) and anxiety and depressive symptoms decreased (-15%), whereas among persons who continued to be unemployed their health remained unchanged. It is recommended to include rapid job placement and coaching on the job as part of an interdisciplinary re-employment program as well as to invest in building a network of potential employers. These results are based on a 2-year quasi-experiment including 434 unemployed persons.

The systematic review and meta-analysis, which included sixteen studies, showed some indications that re-employment programs based on the place-then-train model had a positive effect on quality of life with a pooled effect size of 0.28 (95% CI 0.04 to 0.52). In conclusion, among persons with mental health problems, (health related) quality of life is positively influenced by job placement as part of programs that integrate health services with employment services. (chapter 6)

Conclusion

Persons with a poor health were more likely to become long-term unemployed compared to persons in good health. Poor health negatively influenced job-search cognitions and coping resources, which in turn resulted in less active job-search behavior and lower likelihood to gain paid employment. Entering paid employment had a positive effect on perceived health and quality of life and also anxiety and depressive symptoms decreased after re-employment. Paid employment can be considered an effective intervention to improve the health disadvantage among unemployed persons.

The interdisciplinary reemployment program, in which employment specialists as well as mental health specialists work together in interdisciplinary teams, showed no added value compared to the regular re-employment programs. The most important missing components of the re-employment intervention were rapid job placement, coaching on the job, and direct connection and communication of employment specialists with employees.

Samenvatting

Werklozen hebben een slechtere gezondheid dan werkenden en een slechte gezondheid vormt een belangrijke belemmering om betaald werk te vinden. Het is van belang om kennis te ontwikkelen over determinanten voor het starten met werk en over effectieve re-integratie programma's voor werkzoekenden met gezondheidsproblemen.
Drie onderzoeksvragen staan centraal in dit proefschrift:

1. In hoeverre beïnvloeden gezondheid en cognities van langdurig werklozen hun kansen op het vinden van betaald werk?
2. Wat is het effect van het starten met betaald werk op de ervaren gezondheid van werklozen?
3. Wat zijn de effecten van specifieke re-integratie trajecten op maatschappelijke participatie, betaald werk en gezondheid van werkzoekenden met mentale gezondheidsproblemen?

- De invloed van gezondheid en cognities van langdurig werklozen op hun kansen op het vinden van betaald werk.

Hoofdstuk 2 laat zien dat een hogere leeftijd, een slechte ervaren gezondheid en lage bereidheid om een baan aan te nemen de belangrijkste voorspellende factoren waren voor voortdurende werkloosheid bij mensen met bijstands- of werkloosheidsuitkering. Mensen met een slechte gezondheid hadden 4 keer zoveel kans om werkloos te blijven vergeleken met gezonde mensen. Daarnaast hadden ook mensen met een lage bereidheid om werk aan te nemen 3 keer zoveel kans om werkloos te blijven. Subgroep analyses lieten dat een laag opleidingsniveau bij mensen met een WW-uitkering bij droeg aan langdurige werkloosheid. Verder bleek bij de mensen met een bijstandsuitkering een lage zelfredzaamheid extra risico te vormen voor langdurige werkloosheid. Deze studie gebruikte landelijke gegevens van een cohort studie van 18 maanden, uitgevoerd onder mensen met een bijstandsuitkering of een WW-uitkering.

Vervolgens analyseerden we determinanten van werkzoekgedrag en determinanten van starten met betaald werk in een studie onder Rotterdamse werkzoekenden met een bijstandsuitkering (hoofdstuk 3). Gezondheid, cognities ten aanzien van het zoeken naar werk en coping strategieën tijdens het zoekproces bleken van invloed te zijn op werkzoekgedrag en re-integratie op de arbeidsmarkt. De studie laat zien dat gezondheid van invloed was op werkzoekgedrag en het starten met betaald werk. Daarnaast had een slechte gezondheid een negatieve invloed op cognities ten aanzien van het zoeken naar werk en op copingstrategiën tijdens het zoekproces, wat vervolgens leidde tot minder actief zoekgedrag en een kleinere kans op het starten met betaald werk. Het corrigeren voor negatieve cognities en coping verminderde de invloed van slechte gezondheid op actief zoekgedrag met 50% en op het starten met betaald werk met 33%.

- Het effect van het starten met betaald werk op de ervaren gezondheid van werklozen.

Hoofdstuk 4 laat zien dat voor bijstandsgerechtigden na hun werkhervatting de kans op een goede gezondheid 3 keer zo groot was. Mensen die betaald werk vonden hadden ook een 1.76 keer grotere kans op het verbeteren van hun kwaliteit van leven, dan diegene die werkloos bleven. Vervolgens nam de kans op het verbeteren van kwaliteit van leven, iedere maand dat men werkzaam bleef, ook iets toe (1.12). Bovendien verminderden fysieke beperkingen en angst en depressie wanneer deelnemers aan een re-integratie traject met een betaalde baan starten,

in vergelijking met diegenen die werkloos bleven. Deze resultaten zijn gebaseerd op een 18 maanden durende follow-up studie onder Nederlandse werkzoekenden met een uitkering.

- De effecten van re-integratie trajecten op maatschappelijke participatie, betaald werk en gezondheid van werkzoekenden met mentale gezondheidsproblemen.

Een interdisciplinair re-integratie traject, waarbij arbeidsmarktspecialisten/ werkcoaches en GGZ-hulpverleners samenwerken in interdisciplinaire teams, liet geen toegevoegde waarde zien voor het vinden van betaald werk, ten opzichte van de reguliere re-integratie trajecten. Bovendien verbeterden de mentale en fysieke gezondheid van deelnemers aan het interdisciplinaire re-integratie traject niet meer dan bij de reguliere re-integratietrajecten. Echter, deelnemers die startten met betaald werk, hadden bij de nameting een betere fysieke gezondheid en minder symptomen van angst en depressie, ten opzichte van degene die werkloos bleven.
Deze resultaten volgden uit een quasi-experiment waarbij 434 bijstandsgerechtigden 2 jaar zijn gevolgd (hoofdstuk 5).

Een systematische review van literatuur en een meta-analyse naar effecten van werkgerelateerde interventies op gezondheid, waarbij 16 studies zijn geïncludeerd, biedt een aantal aanwijzingen voor positieve effecten van re-integratie trajecten gebaseerd op het place-then-train model. Deze trajecten hadden een positief effect op de kwaliteit van leven van de deelnemers met een gezamenlijke effect grootte van 0,28 (95% CI 0.04 tot 0.52). Voor deelnemers met mentale gezondheidsproblemen verbeterde de (gezondheidsgerelateerde) kwaliteit van leven door plaatsing op een werkplek als onderdeel van een geïntegreerd zorg- en re-integratietraject. (hoofdstuk 6)

Conclusie

Een slechte ervaren gezondheid van werkzoekenden geeft een grote kans op langdurige werkloosheid. Een slechte gezondheid heeft een negatieve invloed op cognities ten aanzien van het zoeken naar werk en op iemands coping strategieën tijdens het zoekproces, wat vervolgens leidt tot minder actief zoekgedrag en een kleinere kans op betaald werk. Het starten met betaald werk heeft een positief effect op ervaren gezondheid en kwaliteit van leven en daarnaast nemen fysieke beperkingen en angst en depressie klachten af na werkhervatting. Zeker voor mensen met mentale gezondheidsproblemen levert plaatsing op een werkplek als onderdeel van een geïntegreerd zorg- en re-integratietraject gezondheidswinst op. Betaald werk kan worden gezien als een interventie die kan worden ingezet om de gezondheid van werklozen te bevorderen.

Het interdisciplinaire re-integratie traject (ExIT), waarbij arbeidsmarktspecialisten/ werkcoaches en GGZ-hulpverleners samenwerken in interdisciplinaire teams, liet geen toegevoegde waarde zien voor het vinden van betaald werk, ten opzichte van de reguliere re-integratie trajecten.
De belangrijkste ontbrekende elementen van het onderzochte re-integratie traject waren mogelijk; gebrek aan snelle plaatsing op een werkplek en coaching op de werkplek en het gemis van directe verbinding en communicatie van werkcoaches met werkgevers.

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Curriculum Vitae

Bouwine Elizabeth Carlier was born on May 11th, 1977 in Rotterdam, the Netherlands. Growing up in Rotterdam, she completed her secondary education at Rotterdamsch Lyceum. In 1996, she started studying at the University Utrecht, where she obtained master's degrees in Cultural Anthropology in 2002 and Psychology in 2006. After working at the department of public health of the Utrecht municipality and at the Utrecht University she started her PhD study at the Department of Public Health (Erasmus MC) in 2010. During her PhD, she completed a master's degree in Public Health at the Netherlands Institute for Health Sciences (Erasmus MC). In the last years of her PhD, she worked part time at department of public health of the municipalities of Utrecht and Amsterdam as a researcher on health, participation and re-employment.

List of publications

This thesis

2013
Carlier BE, Schuring M, Lötters FJB, Bakker B, Borgers N, Burdorf A. The influence of re-employment on quality of life and self-rated health, a longitudinal study among unemployed persons in the Netherlands. BMC Public Health. 2013;13:503.

Lötters F, Carlier B, Bakker B, Borgers N, Schuring M, & Burdorf A. The influence of perceived health on labour participation among long term unemployed. Journal of occupational rehabilitation. 2013;23(2):300-308.

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2016
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2017
Carlier BE, Schuring M, Burdorf A. Influence of an interdisciplinary re-employment programme among unemployed persons with mental health problems on health, social participation, and paid employment. Journal of occupational rehabilitation. 2017;[Epub ahead of print]

Other publications

2011
Schuring, M., F.A. Reijenga, B. Carlier, A. Burdorf. Perceived health of unemployed persons (Gezond-heidsbeleving van werklozen. Wat is bekend en wat zijn witte vlekken?) UWV Centre of Expertise, 2011.

2014
Van Bergen, A. van Loon, A. van, Ballering, C. Carlier, BE, Aangeenbrug, M. Social exclusion in large cities in the Netherlands: data, experiences and recommendations from practice.
(Sociaal uitgesloten in de grote stad; cijfers, ervaringen en adviezen uit het veld.) G4-Urban Social Exclusion Research, 2014.

2015
Dijk, L. van, Carlier BE. Work or volunteering: for everyone? Experiences of socially vulnerable Utrechts' citizens of paid work and volunteering. (Werk of vrijwilligerswerk: voor iedereen? Ervaringen met betaald werk en vrijwilligerswerk van sociaal kwetsbare Utrechters.)
Meetellen in Utrecht (WIJ 3.0) and Municipality Utrecht, Public Health. 2015

2017
Carlier BE, Lindeman E, van Loon A. Evaluatie trajecten Meedoen Werkt 2016. GGD Amsterdam en Onderzoek, Informatie en Statistiek, Gemeente Amsterdam. 2017

PhD Portfolio

Summary of PhD Training and Teaching
Name: Bouwine E. Carlier
Erasmus MC Department: Public Health
Research School: Netherlands Institute of Health Sciences (NIHES)
PhD period: September 2010 - 2017
Promotor: Prof. Dr. A. Burdorf
Copromotor: Dr. M. Schuring (Erasmus MC)

PhD Training

General academic skills	Year	Workload (ECT)
Scientific writing in English by Van Lenthe, F. J.	2012	0.6
Scientific writing in English by Van der Heide, A.	2013	0.6
Career support workshop	2014	0.3
In-depth courses		
Master degree Health Sciences, specialization Public Health, NIHES, Erasmus University Rotterdam, the Netherlands	2011-2014	70
In-depth courses Principles of Research in Medicine Introduction to Global Public Health Methods of Public Health Research Primary and Secondary Prevention Research Social Epidemiology Biostatistical Methods I: Basic Principles Biostatistical Methods II: Popular Regression Models Conceptual Foundation of Epidemiologic Study Design Causal Inference Principles of Epidemiologic Data-analysis thnicity, Health and Health Care Health Services Research and Practice From Problem to Solution in Public Health		
National and international conferences		
Werkgroep Epidemiologisch Onderzoek Nederland (WEON) conference. Health and disease during the life course, attendance and oral presentation: The influence of re-employment on quality of life and self-rated health among unemployed persons in the Netherlands.	06-2012	0.9
International Conference on Work, Wellbeing and Wealth: Active Ageing at Work – Helsinki, oral presentation: The influence of re-employment on quality of life and self-rated health among unemployed persons in the Netherlands.	08-2103	0.6

General academic skills	Year	Workload (ECT)
National and international conferences		
Nederlands Congres Volksgezondheid, Perspectives on Public Health: attendance and poster presentation: General health, coping and job-search cognitions influence job-search behavior and re-employment; a longitudinal study of unemployed persons in the Netherlands.	04-2014	0.6
Nederlands Congres Volksgezondheid, Prevention in health care en public health: Attendance and oral presentation: Work or volunteering: for everyone? Experiences of socially vulnerable Utrecht' citizens.	04-2015	0.6
Nederlands Congres Volksgezondheid, Connecting worlds, health and the social agenda: Attendance and oral presentation: Effects of an interdisciplinary re-employment programme among unemployed persons with mental health problems on health, social participation, and paid employment.	04-2016	0.6
Other seminars and presentations		
Design of the study: evaluation of an interdisciplinary re-employment programme among unemployed persons with mental health problems on health, social participation, and paid employment. Oral presentation: Department of Work and Income Municipality of Rotterdam	05-2011	0.02
Weekly seminars at Department of Public Health, ErasmusMC. Attendance.	2011-2014	4
The influence of re-employment on self-rated health among unemployed persons in the Netherlands. Oral presentation, Research meeting, Department of Public Health, ErasmusMC.	02-2013	0.02
TOTAL Workload (ECT)		78.84