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Title page

Emotions and encounters with healthcare professionals as possible predictors for the ability to return to work in people on sick leave due to heart failure: a cross-sectional study

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ABSTRACT

Objectives: To live with heart failure means that life is delimited. Still, people with heart failure can have a desire to stay active in working life as long as possible. Although a number of factors affect sick leave and rehabilitation processes little is known about sick leave and vocational rehabilitation concerning people with heart failure. This study aimed to identify emotions and encounters with healthcare professionals as possible predictors for the ability to return to work in people on sick leave due to heart failure. *Design*: A population-based cross-sectional study design was used. *Setting:* The study was conducted in Sweden. Data were collected in 2012 from three different sources: two official registries and one postal questionnaire. *Participants:* A total of 590 individuals were included. *Statistics:* Descriptive statistics, correlation analysis and linear multiple regression analysis were used. *Results*: Three variables, feeling strengthened in the situation (β=-0.21, p=0.02), feeling happy (β=-0.24, p=0.02) and receiving encouragement about work (β=-0.32, p=<0.001), were identified as possible predictive factors for the ability to return to work. *Conclusion*: To feel strengthened, happy and to receive encouragement about work can affect the return to work process for people on sick leave due to heart failure. Rehabilitation programs need to include interventions that enhance patient empowerment, shared decision making and a patient-centered approach.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- The postal questionnaire has been used in several population-based studies, implying high reliability and validity in data.
- Data from the two official registries in use are highly reliable, still there might be flaws due to registration procedures.
- The cross-sectional design means there is no causality in predictions and there can be some non-response bias due to the relatively low response rate.
- This study was conducted in Sweden but the results can be generalized to other European countries with similar conditions.

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INTRODUCTION

Heart failure is a chronic progressive condition caused by an inability of the heart to deliver the required amount of oxygenated blood to the body's cells and tissues. A failing heart results in symptoms such as fatigue, breathlessness or ankle swelling[1]. The condition is also characterized by an unpredictable course meaning acute exacerbations unexpectedly interrupt stable periods[2]. This causes difficulties for people with heart failure to work and to maintain an active place in working life. Subsequently, many patients with heart failure are sick listed for long periods and there is a risk they never return to the workforce[3]. For many people the ability to work and provide for themselves are important aspects of life and of self-identity[4-6]. To be unable to work can lead to internal conflicts, or losses such as loss of self-esteem, economic security, or social belonging[7, 8]. This is also true for people who live with heart failure.

About 10% of the patients with heart failure are under the age of 60-65[9]. People with heart failure under the age of 60-65 experience poor quality of life, poor health or suffer more from depression and/or low mood to a greater extent than older people[8, 10-13]. Socio-demographic factors such as being born in a foreign country, low level of education, low income, being older, and female gender are associated with long-term sick leave and/or early retirement[3, 14]. But there are also other factors that can affect long-term sick listed patients' ability to return to work. Such factors include how healthcare professionals encounter the sick listed person[15-20] but also emotional responses, especially so-called social emotions, patient empowerment, shared decision making and patient-centered care can affect the ability to return to work[21-24]. Social emotions are evoked and experienced when encountered by

other people, especially when encountered by people who are perceived as particularly significant[21]. In the context of the present study such significant people are healthcare professionals. Patient-centeredness includes patients' perceptions of the relationship and communication with healthcare professionals[23]. Patient empowerment has been described as a desired goal in nursing that implies patients' active participation in own healthcare[25]. Patient empowerment can be been defined in different ways. Commonly, the concept is described as both a process and an outcome. In addition, shared decision making is considered a prerequisite for patient participation. Shared decision means that relationships between patients and healthcare professionals entail mutual goal setting. In addition, shared decision making can facilitate understanding between patients and healthcare professionals if well implemented[22].

There is virtually no research about how to support people with heart failure regarding sick leave and working life. In addition, rehabilitation programs and interventions for people with heart failure commonly focus on medication, physical activity or self-care[26] which means aspects related to working life tend to be forgotten or unnoticed. The aim of this study, thus, was to identify emotions and encounters with healthcare professionals as possible predictors for the ability to return to work in people on sick leave due to heart failure.

METHOD

This was a population-based cross-sectional study conducted in Sweden. Data were collected in 2012 from three different sources: two official registries and one postal questionnaire. First, the regional Ethics Review Board in Uppsala approved the study (Dnr 2011/074).

Sample

Eligibility criteria: All people in Sweden on sick leave due to heart failure (ICD diagnosis I50.0) during the period of March 1, 2012 to May 31, 2012. Sweden Statistics obtained

information from the Swedish Social Insurance Agency's sick leave registry about people who had been sick listed due to heart failure during the current period. The Social Insurance Agency could identify 1351 subjects. There were 64 objects that were excluded due to death or because they had moved abroad. Next, Statistics Sweden distributed the questionnaire to the identified persons. After two postal reminders, 590 people had responded to the survey (response rate 45.8 per cent). Since return of the questionnaire counted as consent to participate these 590 respondents were included in the study.

Data collection

First, data were obtained from the Social Insurance Agency's sick leave registry about the respondents' sick leave history (diagnosis; number of sick leave spells; amount of sick leave compensation; and, what kind of sick leave compensation the individuals had been entitled to). In addition, socio-demographic variables (sex; year of birth; age at the end of 2012; marital status, country of birth: level of education; and annual income) were obtained from Statistic Sweden's population registry.

The questionnaire was developed at Karolinska Instiutet, Stockholm, Sweden and has been used in previous studies. It contained questions about encounters and emotions. The respondents were asked whether they had been positively or negatively encountered by healthcare professionals in relation to their sick leave due to heart failure (response options: yes or no). Healthcare professionals were defined as physicians, nurses, physiotherapists, counselor/psychologists, occupational therapists, naprapaths/chiropractors, or 'other professions'. The respondents answered the questions once for all types of health professionals, that is, there were not separate questions for each group of healthcare professionals. Next, the respondents were asked to answer to 21 statements about what emotions positive and negative encounters with healthcare professionals had evoked (see table 1). There were four possible responses ranging from 'Agree to a great extent' to 'Do not agree

at all'. The respondents were also asked to estimate whether positive and negative encounters with healthcare professionals had facilitated or impeded their ability to return to work. There were six possible responses: 'Facilitated very much', 'Facilitated to some extent', 'No impact', 'Impeded to a certain extent', 'Impeded very much', or 'Have not been positively/negatively encountered'. Finally, the respondents were asked four questions about how they had been encountered by healthcare professionals with regard to their disease. The questions concerned whether they had received useful information, advice and support about work, and encouragement about sick leave and work. There were four possible responses: 'Always/almost always', 'Often', 'Rarely', 'Never/almost never'.

Table 1. Numbers and proportions for emotions that were evoked in encounters with healthcare professionals. The question read: "How well do the following statements describe how you felt in your encounters with this person within healthcare?"

I felt…	Positive encounters with healthcare professionals %	I felt…	Negative encounters with healthcare professionals %
…respected	94	…disappointed	62
…strengthened in my situation	89	…angry/annoyed	61
…relieved/reassured	89	…powerless	59
…liked	89	…weak/low-spirited	55
…contended	88	…submissive	55
…appreciated	82	…sad	54
…optimistic	80	…pessimistic	52
…energetic	78	…misunderstood	49
…happy	77	…anxious/scared	46
…proud	63	…violated	42
		…ashamed	23

Data analyses

Descriptive statistics were used for frequencies and proportions. Correlations between variables were calculated with Pearson's correlation coefficients (r). Variables with significant coefficients ($p<.001$) were included in a second stage of analyses. Linear multiple regression analysis was used to explore the shared variance between the dependent variable (positive encounters' impact on the ability to return to work) and the independent variables

(feeling respected, contended, liked, strengthened in the situation, appreciated, energetic, happy, proud, relived/reassured, optimistic, disappointed, angry/annoyed, powerless, submissive, sad, weak/low-spirited, pessimistic, misunderstood, anxious/scared, violated, ashamed, received useful information, received useful advice and support about work, receiving encouragement about sick leave and work). The non-standardized (B) and standardized (Beta) coefficients with respective p-values were also calculated.

RESULTS

Numbers and proportions of answers about emotions evoked by encounters with healthcare professionals are shown in table 1. Most respondents agreed that positive encounters evoked feelings of being respected. Concerning negative encounters, most respondents agreed that feelings of disappointment and anger/annoyance were evoked. Table 2 shows socio-demographic data for respondents who perceived that positive encounters with healthcare professionals facilitated their ability to return to work (n=255, 43.2%), and for respondents who perceived that negative encounters with healthcare professionals impeded their ability to return to work (n=34, 5.8%).

Table 2. Socio-demographic characteristics for respondents who perceived that encounters with healthcare professionals facilitated (n=255) or impeded (n=34) their ability to return to work.

Socio-demographic variables	Positive encounters facilitated return to work[1] %	Negative encounters impeded return to work[2] %
Gender		
-male	70	74
-female	30	26
Age		
-23 to 59	54	62
-60 to 67	46	38
Country of birth		
-Sweden	88	71
-other	12	29
Marital status		
-married	55	50
-unmarried	26	21
-divorced/widowed	19	29
Income		
-low	10	29
-average	45	44
-high	45	26
Level of education		
-compulsory	19	24
-high school	59	53
-university	22	23

Note: The responses were dichotomized into: [1] 'facilitated very much/facilitated to some extent' and 'no impact/impeded to some extent/impeded very much' and [2] 'impeded very much/impeded to some extent' and 'no impact/facilitated to some extent/facilitated very much'.

The respondents were asked whether they had received useful information (number of responses n=509), advice and support about work (n=486), and encouragement about sick leave (n=484) and work (n=483). Most respondents had received useful information (84.7%). About half of the respondents had received useful advice and support about work (54.9%). One fourth had received encouragement about sick leave (26.0%). More than half of the respondents had rarely or never received encouragement about work (53.2%).

All emotions evoked by positive encounters were significantly correlated with impact of positive encounters on self-estimated ability to return to work (r -0.26 to -0.15, p <.001 to .001). In addition, 'Received useful information', 'Received useful advice and support about work', and 'Received encouragement about work' significantly correlated with impact of

positive encounters on self-estimated ability to return to work. Table 3 presents descriptive statistics and table 4 shows the Pearson's correlation coefficients between all included variables.

Table 3. Descriptive statistics for impact of positive encounters on self-estimated ability to return to work, emotions evoked by positive encounters and for questions regarding information, advice/support, and encouragement (n=372)

Questionnaire item	Mean	SD
Impact of positive encounters with healthcare professionals on self-estimated ability to return to work[1)]	3.9	0.9
Liked[2)]	1.7	0.7
Strengthened in my situation[2)]	1.6	0.7
Energetic[2)]	1.9	0.8
Relieved/reassured[2)]	1.7	0.7
Optimistic[2)]	1.8	0.8
Appreciated[2)]	1.8	0.8
Respected[2)]	1.5	0.7
Contended[2)]	1.7	0.7
Happy[2)]	1.9	0.9
Proud[2)]	2.2	0.9
Received useful information[3)]	1.8	0.7
Received useful advice and support about work[3)]	2.4	1.0
Received encouragement about work[3)]	2.6	1.0

[1)] Scale 1-6 (1 Impeded much, 2 Impeded to a certain extent, 3 No impact, 4 Facilitated to a certain extent, 5 Facilitated much, 6 Was not positively encountered)
[2)] Scale 1-4 (1 Agree to a great extent, 2 Agree to a certain extent, 3 Disagree to a certain extent, 4 Disagree to a great extent)
[3)] Scale 1-4 (1 Always/almost always, 2 Often, 3 Rarely, 4 Never/almost never)

Table 4. The Pearson's correlation coefficients (r) and p-values for all variables in the multiple regression model.

Questionnaire item	Impact of positive encounters with healthcare professionals on self-estimated ability to return to work[1)]	
	(r)	p.
Liked	-0.16	.001
Strengthened in my situation	-0.25	<.001
Energetic	-0.24	<.001
Relieved/reassured	-0.20	<.001
Optimistic	-0.26	<.001
Appreciated	-0.19	<.001
Respected	-0.15	.001
Contended	-0.21	<.001
Happy	-0.25	<.001
Proud	-0.23	<.001
Received useful information	-0.16	<.001
Received useful advice and support about work	-0.24	<.001
Received encouragement about work	-0.34	<.001

[1)] Negative correlations mean that the strength of the relationship between the impact of positive encounters on self-estimated ability to return to work and the different emotions increases.

Emotions evoked by negative encounters were not significantly correlated with impact of positive encounters on self-estimated ability to return to work (r between -0.05 and 0.12, p between 0.3 and 0.9). Furthermore, 'Received encouragement about sick leave' was not significantly correlated with the self-estimated ability to return to work (r=-0.02, p=.73).

A multiple regression analysis was conducted for the variables that significantly correlated with self-estimated ability to return to work (table 5). The model showed 23% of variance being shared with the dependent and independent variables (R square=0.26, Adjusted R square 0.23, F=9.55 p <0.001). Significant Beta and B values were found for three variables: feeling strengthened in the situation, feeling happy and receiving encouragement about work.

Table 5. Multiple regression analysis for variables significantly correlated with self-estimated ability to return to work

Questionnaire item	B	Beta	p.
Liked	0.05	0.04	0.59
Strengthened in my situation	-0.28	-0.21	0.02
Energetic	-0.09	-0.08	0.28
Relieved/reassured	0.03	0.02	0.80
Optimistic	-0.10	-0.09	0.33
Appreciated	0.11	0.09	0.31
Respected	0.14	0.10	0.18
Contended	0.04	0.03	0.75
Happy	-0.25	-0.24	0.02
Proud	0.09	0.09	0.29
Received useful information	-0.07	-0.05	0.35
Received useful advice and support about work	-0.05	-0.06	0.31
Received encouragement about work	-0.28	-0.32	<.001

Note: Negative correlations mean that the strength of the relationship between the impact of positive encounters on self-estimated ability to return to work and the different emotions increases.

DISCUSSION

The results of this study demonstrated that to feel strengthened in the situation, to feel happy and to receive encouragement about work can possibly predict the ability to return to work for people with heart failure. This result can be reflected over in relation to the concept of 'patient empowerment'. Previously, patient empowerment has been described as an activity that involves "recognition and active support of the patient's ability and responsibility to self-manage his or her disease" [27] (p. 5). Healthcare professionals can facilitate patient empowerment by acknowledgement of the patients' perceived ability to handle important aspects of her or his health or disease. By bringing own knowledge to the situation healthcare professionals can participate in the patients' process of change[28]. The professionals can also activate and encourage the patient to take own responsibility for her or his health concerns, to take actions to improve health and to become an expert in self-management of his or her own health[27]. Practical ways of doing this can be by providing educational programs, patient activation and health promotion interventions[27]. For example, Shearer, Cisar and Greenberg[28] found that a telephone-delivered empowerment intervention facilitated self-

care in people with heart failure. Moreover, Zimmermann et al[23] found that interactions and relationships that include friendliness, attention paid to the patient, to feel appreciated and welcomed, receiving empathy, personal interest and consideration of symptoms are particularly positive concerning patients' perceptions of patient-centeredness.

In addition, empowerment has been defined as a process and a goal, which means that sick listed persons' inner resources can be strengthened in different ways through interaction with other people, for example with healthcare professionals[21]. A basic assumption, though, is that positive social emotions contribute to empowerment which in turn can increase the ability to return to work[23]. With regard to negative social emotions such as shame the opposite would occur. The results of the present study are consistent with the assumptions about emotions and empowerment even though some emotions investigated in the present study were rather more generic than specific. If people on sick leave due to heart failure perceive they are positively encountered by healthcare professionals this can possibly enhance self-esteem, empowerment, and the ability to return to work.

Cardiac rehabilitation has been defined as a "the coordinated sum of activities required to influence favorably the underlying cause of cardiovascular disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume optimal functioning in their community and through improved health behavior, slow or reverse progression of disease"[29]. In addition, interventions that enhance return to work need to include person-directed interventions[30]. Thus, rehabilitation programs need to include a patient centered approach with systematic activities that support the patients' self-esteem, contribute to patient empowerment and improve their ability to return to work[24]. Nurses specialized in problems with heart failure is a professional group that has adequate competence and knowledge for supporting people with heart failure. In addition, these nurses often have continuing and close relationships with the patients that can

serve as a rich foundation for mutual confidence and trust. Thus, heart failure nurses could function as key persons in relation to sick leave and rehabilitation processes for people on sick leave due to heart failure. One challenge, however, is to develop rehabilitation programs for people with heart failure that include not only medical treatment, self-care and physical activity but also psycho-social interventions that can support the patients' return to work processes when possible[cf. 29]. The present results showed that more than half of the respondents perceived that they had received information and support about work but they had not received encouragement about work. This indicates that vocational rehabilitation tends to be forgotten or overlooked in the interaction between patients and healthcare professionals. There is a need for more research about work, sick leave and vocational rehabilitation in relation to people with heart failure. In particular, more intervention studies are needed in order to develop and implement rehabilitation programs that can facilitate patient empowerment, shared decision making, and patient-centeredness in relation to patients in working age with heart failure.

Conclusions

People with heart failure are often sick listed for long periods and they risk exclusion from the labor market due to disability pension and early retirement. To feel strengthened, happy and to receive encouragement about work can affect their return to work process. Rehabilitation programs for people with heart failure often focus on medical treatment, self-care and physical activity, while the patients' needs for support in relation to sick leave and work are overlooked. In order to develop structured rehabilitation programs more efforts, more research and more resources are needed.

Contributors

LN and AS conceived and designed the study, analysed the data, interpreted the results, and wrote the manuscript.

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Competing Interests

The authors declare that they have no competing interests to disclose.

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Data Sharing Statement

There is no additional unpublished data from the study that is available to anyone else.

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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
✓ **Title and abstract**	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
✓ Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
✓ Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
✓ Study design	4	Present key elements of study design early in the paper
✓ Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
✓ Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
V ✓ ariables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
✓ Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
✓ Bias	9	Describe any efforts to address potential sources of bias
✓ Study size	10	Explain how the study size was arrived at
✓ Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
✓ Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
P ✓articipants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
✓Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
✓Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures
✓Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
✓Key results	18	Summarise key results with reference to study objectives
✓Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
✓Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
✓Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
✓Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Emotions and encounters with healthcare professionals as predictors for the self-estimated ability to return to work: a cross-sectional study of people with heart failure

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Title page

Emotions and encounters with healthcare professionals as predictors for the self-estimated ability to return to work: a cross-sectional study of people with heart failure

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Keywords: cross-sectional study, emotions, heart failure, healthcare professionals, sick leave

ABSTRACT

Objectives: To live with heart failure means that life is delimited. Still, people with heart failure can have a desire to stay active in working life as long as possible. Although a number of factors affect sick leave and rehabilitation processes little is known about sick leave and vocational rehabilitation concerning people with heart failure. This study aimed to identify emotions and encounters with healthcare professionals as possible predictors for the self-estimated ability to return to work in people on sick leave due to heart failure. *Design*: A population-based cross-sectional study design was used. *Setting:* The study was conducted in Sweden. Data were collected in 2012 from three different sources: two official registries and one postal questionnaire. *Participants:* A total of 590 individuals were included. *Statistics:* Descriptive statistics, correlation analysis and linear multiple regression analysis were used. *Results*: Three variables, feeling strengthened in the situation (β=-0.21, p=0.02), feeling happy (β=-0.24, p=0.02) and receiving encouragement about work (β=-0.32, p=<0.001), were identified as possible predictive factors for the self-estimated ability to return to work. *Conclusion*: To feel strengthened, happy and to receive encouragement about work can affect the return to work process for people on sick leave due to heart failure. In order to develop and implement rehabilitation programs to meet these needs more research is needed.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- The postal questionnaire has been used in several population-based studies, implying high reliability and validity in data.
- Data from the two official registries in use are highly reliable, still there might be flaws due to registration procedures.
- The cross-sectional design means there is no causality in predictions and there can be some non-response bias due to the relatively low response rate.
- This study was conducted in Sweden but the results can be generalized to other European countries with similar conditions.

Emotions and encounters with healthcare professionals as predictors for the self-estimated ability to return to work: a cross-sectional study of people with heart failure

INTRODUCTION

For many people the ability to work and provide for themselves are important aspects of life and of self-identity[1-3]. This is also true for people who live with heart failure. Heart failure is a chronic progressive condition caused by an inability of the heart to deliver a required amount of oxygenated blood to the body's cells and tissues. A failing heart results in symptoms such as fatigue or breathlessness[4]. The condition is also characterized by an unpredictable course meaning acute exacerbations unexpectedly interrupt stable periods[5]. This causes difficulties for people with heart failure to work and to maintain an active place in working life. Subsequently, many patients with heart failure are sick listed for long periods and there is a risk they never return to work[6]. To be unable to work can lead to internal conflicts, or losses such as loss of self-esteem, economic security, or social belonging[7, 8].

In spite of medical advances the prevalence of heart failure continues to rise. It is estimated that about 1-2% of the population have heart failure[4]. Elderly (over 65 years) are most affected, but the condition also affects people under the age of 60-65. The prevalence of heart failure among people younger than 65 years has been estimated to 0.7-1%[9, 10]. Younger people with heart failure experience poor quality of life and poor health. In addition, they suffer more than older people from depression and/or low mood[8, 11-14].

Socio-demographic factors such as being born in a foreign country, low level of education, low income, being older, and female gender are associated with long-term sick leave and/or early retirement[6, 15]. But there are also other factors that can affect long-term sick listed

patients' ability to return to work. Such factors include how healthcare professionals encounter the sick listed person[16-19]. Also emotional responses can affect the ability to return to work[20]. Emotions are evoked and experienced when encountered by other people, especially when encountered by people who are perceived as particularly significant[20]. In the context of the present study such significant people are healthcare professionals.

There is virtually no research about how to support people with heart failure regarding sick leave and working life. In addition, rehabilitation programs and interventions for people with heart failure commonly focus on medication, physical activity or self-care[21] which means aspects related to working life tend to be forgotten or unnoticed. In order to develop targeted interventions there is a need for more understanding about factors that possibly affect sick leave and return to work for people with heart failure. The aim of this study was to investigate emotions and encounters with healthcare professionals as possible predictors for heart failure patients' self-estimated ability to return to work.

METHOD

This was a population-based cross-sectional study conducted in Sweden. Data were collected from three different sources during fall 2012: two official registries and one postal questionnaire. First, the regional Ethics Review Board in Uppsala, Sweden, approved the study (2011/074).

Sample

Several highly reliable registries are available for research in Sweden. The registries are population based and contain person related information. In addition, each individual has an unique civic registration number that makes it possible to connect data from a registry with another[22]. For the current study two registries were used: the Social Insurance Agency´s sick leave registry and Statistic Sweden's population registry.

In Sweden, all residents are entitled to healthcare. The healthcare system is largely tax-funded. When an individual get ill the income loss is compensated by the employer for the first 14 days. After that the Swedish Social Insurance Agency pays sickness benefit. Also, unemployed or self-employed people are paid sickness benefit. If an individual's working capacity is permanently reduced due to illness or disability, he or she obtains sickness or activity compensation[23].

The eligibility criteria were being on sick leave due to heart failure (ICD diagnosis I50.0) during the period of March 1, 2012 to May 31, 2012. First, Sweden Statistics obtained information from the Swedish Social Insurance Agency's sick leave registry about people who had been sick listed due to heart failure during the current period. The Social Insurance Agency could identify 1351 subjects. There were 64 objects that were excluded due to death or because they had moved abroad. Statistics Sweden distributed a comprehensive questionnaire to the identified persons. After two postal reminders, 590 people had responded to the survey (response rate 45.8 per cent). Since return of the questionnaire counted as consent to participate these 590 respondents were included in the study.

Data collection

The questionnaire was developed at Karolinska Institutet, Stockholm, Sweden. It has previously been used in several studies (see for example[16, 17, 24-26]). The questionnaire is based on findings from qualitative and quantitative studies, clinical experiences, theoretical considerations, and pilot studies[25]. Thus, high face validity can be claimed[24]. The questionnaire contains questions about positive and negative encounters with healthcare professionals and social insurance officers, what emotions the encounters have evoked, and whether the encounters have facilitated or impeded the respondents' self-estimated ability to return to work. In the present paper, the focus for the analysis was emotions evoked by

positive and negative encounters with healthcare professionals. Since the questionnaire is very comprehensive other parts of it has been reported elsewhere[18, 19, 27, 28].

The respondents were asked to answer 'yes' or 'no' to whether they had been positively encountered by healthcare professionals in relation to their sick leave due to heart failure. In turn, the same question was asked regarding negative encounters. Healthcare professionals were defined as physicians, nurses, physiotherapists, counselor/psychologists, occupational therapists, naprapaths/chiropractors, or 'other professions'. The respondents answered the questions once for all types of health professionals, that is, there were not separate questions for each group of healthcare professionals. Next, if the respondents answered 'yes' they were asked to respond to ten statements about emotions evoked by positive encounters with healthcare professionals. There were four possible responses ranging from 'Agree to a great extent' to 'Do not agree at all'. In similar, they were asked to respond to eleven corresponding statements about emotions evoked by negative encounters.

Next, the respondents were asked to estimate whether positive encounters with healthcare professionals had facilitated or impeded their ability to return to work. There were six possible responses: 'Have not been positively encountered', 'Impeded very much', 'Impeded to a certain extent', 'No impact', 'Facilitated to some extent', or 'Facilitated very much'. They were also asked to respond to corresponding statements about negative encounters. Finally, the respondents were asked four questions about how they had been supported by healthcare professionals with regard to heart failure. The questions concerned whether they had received useful information, useful advice and support about paid work, encouragement about paid work and encouragement about being on sick leave. There were four possible responses: 'Always/almost always', 'Often', 'Rarely', 'Never/almost never'.

Socio-demographic variables (sex; year of birth; age at the end of 2012; marital status, country of birth: level of education; and annual income) were obtained from Statistic Sweden's population registry.

Data analyses

Descriptive statistics were used for frequencies and proportions. Correlations between variables were calculated with Pearson's correlation coefficients (r). Variables with significant coefficients ($p<.001$) were included in a second stage of analyses. Linear multiple regression analysis was used to explore the shared variance between the dependent variable (positive encounters' impact on the self-estimated ability to return to work) and the independent variables (feeling respected, contended, liked, strengthened in the situation, appreciated, energetic, happy, proud, relived/reassured, optimistic, disappointed, angry/annoyed, powerless, submissive, sad, weak/low-spirited, pessimistic, misunderstood, anxious/scared, wronged, ashamed, received useful information, received useful advice and support about paid work, receiving encouragement about paid work and sick leave). The non-standardized (B) and standardized (Beta) coefficients with respective p-values were also calculated.

RESULTS

Table 1 shows socio-demographic characteristics for all respondents and for respondents who had experienced positive and negative encounters respectively with healthcare professionals.

Table 1. Socio-demographic characteristics for all respondents and for respondents who had experienced positive and negative encounters respectively with healthcare professionals.

Categorical variable	**All respondents** n (%)	**Respondents with experience of positive encounters** n (%)	**Respondents with experience of negative encounters** n (%)
All	590 (100)	558 (100)	78 (100)
Gender			
-male	414 (70)	390 (70)	52 (67)
-female	176 (30)	168 (30)	26 (33)
Age categories			
-23 to 59	269 (46)	255 (46)	41 (53)
-60 to 67	321 (54)	303 (54)	37 (47)
Country of birth			
-Sweden	491 (83)	468 (84)	65 (83)
-other	99 (17)	90 (16)	13 (17)
Marital status			
-married	316 (54)	308 (55)	46 (59)
-unmarried	150 (25)	142 (25)	17 (22)
-divorced/widowed	124 (21)	108 (19)	15 (19)
Income			
-low	108 (18)	101 (18)	18 (23)
-average	297 (50)	281 (50)	36 (46)
-high	185 (31)	176 (32)	24 (31)
Level of education			
-compulsory	145 (25)	138 (25)	18 (23)
-high school	345 (58)	323 (58)	47 (60)
-university	100 (17)	97 (17)	13 (17)

Numbers and proportions of answers about emotions evoked by encounters with healthcare professionals are shown in Table 2. Most respondents agreed that positive encounters evoked feelings of being respected.

Table 2. Numbers and percentages for respondents that to a certain or great extent agreed to statements about emotions evoked in encounters with healthcare professionals. The question read: "How well do the following statements describe how you felt in your encounters with this person within healthcare?" The response options ranged from 1 'Agree to a great extent' to 4 'Do not agree at all'.

I felt…	**Total number of responses** n (%)	**Positive encounters** n (%)	**I felt…**	**Total number of responses** n (%)	**Negative encounters** n (%)
…respected	499 (100)	470 (94)	…disappointed	98 (100)	61 (62)
…strengthened in my situation	486 (100)	433 (89)	…angry/annoyed	95 (100)	58 (61)
…relieved/reassured	494 (100)	439 (89)	…powerless	98 (100)	58 (59)
…liked	477 (100)	422 (89)	…weak/low-spirited	94 (100)	52 (55)
…contended	488 (100)	429 (88)	…submissive	96 (100)	53 (55)
…appreciated	472 (100)	385 (82)	…sad	96 (100)	52 (54)
…optimistic	482 (100)	386 (80)	…pessimistic	96 (100)	50 (52)
…energetic	476 (100)	370 (78)	…misunderstood	96 (100)	47 (49)
…happy	474 (100)	364 (77)	…anxious/scared	96 (100)	44 (46)
…proud	460 (100)	291 (63)	…wronged	96 (100)	40 (42)
			…ashamed	94 (100)	22 (23)

Concerning negative encounters, a majority of those who responded agreed that feelings of disappointment were evoked. Table 3 shows socio-demographic data for respondents who perceived that positive and negative encounters respectively had facilitated or impeded their self-estimated ability to return to work.

Table 3 Socio-demographic characteristics and respondents' perceptions of how positive and negative encounters with healthcare professionals influenced their ability to return to work. The question read: 'How have positive (negative) encounters from healthcare professionals affected your ability to return to work?' There was one response option that read 1 'I have not been positively (negatively) encountered'. The other response options ranged from 2 'Impeded (facilitated) very much' to 6 'Facilitated (impeded) very much'.

		Return to work was…			
		Positive encounters		Negative encounters	
Categorical variables	**All** n (%)	…facilitated n (%)	…not influenced n (%)	…impeded n (%)	…not influenced n (%)
	590 (100)	255 (100)	258 (100)	34 (100)	221 (100)
Gender					
-male	414 (70)	178 (70)	178 (69)	25 (74)	151 (68)
-female	176 (30)	77 (30)	80 (31)	9 (26)	70 (32)
Age					
-23 to 59	269 (46)	138 (54)	108 (42)	21 (62)	98 (44)
-60 to 67	321 (54)	117 (46)	150 (58)	13 (38)	123 (56)
Country of birth					
-Sweden	491 (83)	223 (87)	218 (84)	24 (71)	187 (85)
-other	99 (17)	32 (13)	40 (16)	10 (29)	34 (15)
Marital status					
-married	316 (54)	140 (55)	136 (53)	17 (50)	122 (55)
-unmarried	150 (25)	66 (26)	69 (27)	7 (21)	56 (25)
-divorced/widowed	124 (21)	49 (19)	53 (21)	10 (29)	43 (19)
Income					
-low	108 (18)	25 (10)	59 (23)	10 (29)	50 (23)
-average	297 (50)	116 (45)	138 (53)	15 (44)	118 (53)
-high	185 (31)	114 (45)	61 (24)	9 (26)	53 (24)
Level of education					
-compulsory	145 (25)	68 (27)	65 (25)	5 (15)	60 (15)
-high school	345 (58)	147 (58)	148 (57)	25 (74)	121 (55)
-university	100 (17)	40 (16)	45 (17)	4 (12)	40 (18)

Figure 1 shows that most of the respondents had received useful information (n=509). About half of the respondents had received useful advice and support (n=486) or encouragement about paid work (n=483). One fourth had been encouraged to be on sick leave (n=484).

Table 4 shows the Pearson's correlation coefficients between all included variables. All emotions evoked by positive encounters were significantly correlated with impact of positive encounters on self-estimated ability to return to work (r 0.15 to 0.26, p <.001 to .001).

Table 4. The Pearson's correlation coefficients (r) and p-values for all variables in the multiple regression model.

Questionnaire item	Impact of positive encounters with healthcare professionals on self-estimated ability to return to work*	
	(r)	p.
Liked**	0.16	.001
Strengthened in my situation**	0.25	<.001
Energetic**	0.24	<.001
Relieved/reassured**	0.20	<.001
Optimistic**	0.26	<.001
Appreciated**	0.19	<.001
Respected**	0.15	.001
Contended**	0.21	<.001
Happy**	0.25	<.001
Proud**	0.23	<.001
Received useful information***	0.16	<.001
Received useful advice and support about work***	0.24	<.001
Received encouragement about work***	0.34	<.001

* Scale 1-6 (1 Was not positively encountered, 2 Impeded much, 3 Impeded to a certain extent, 4 No impact, 5 Facilitated to a certain extent, 6 Facilitated much). Higher scores indicate more positive impact.

** Scale 1-4 (1 Agree to a great extent, 2 Agree to a certain extent, 3 Disagree to a certain extent, 4 Disagree to a great extent). Lower scores indicate more agreement.

*** Scale 1-4 (1 Always/almost always, 2 Often, 3 Rarely, 4 Never/almost never). Lower scores indicate more support.

In addition, 'Received useful information', 'Received useful advice and support about paid work', and 'Received encouragement about paid work' significantly correlated with impact of positive encounters on self-estimated ability to return to work. Descriptive statistics are presented in Table 5.

Table 5. Descriptive statistics for all variables in the multiple regression analysis: the respondents' perceptions of how positive encounters influenced their ability to return to work, emotions evoked by positive encounters and, experiences of receiving information, advice/support, and encouragement about paid work (n=372)

Questionnaire item	Mean	SD
Impact of positive encounters with healthcare professionals on self-estimated ability to return to work*	3.9	0.9
Liked**	1.7	0.7
Strengthened in my situation**	1.6	0.7
Energetic**	1.9	0.8
Relieved/reassured**	1.7	0.7
Optimistic**	1.8	0.8
Appreciated**	1.8	0.8
Respected**	1.5	0.7
Contended**	1.7	0.7
Happy**	1.9	0.9
Proud**	2.2	0.9

Received useful information***	1.8	0.7
Received useful advice and support about work***	2.4	1.0
Received encouragement about work***	2.6	1.0

* Scale 1-6 (1 Was not positively encountered, 2 Impeded much, 3 Impeded to a certain extent, 4 No impact, 5 Facilitated to a certain extent, 6 Facilitated much). Higher scores indicate more positive impact.
** Scale 1-4 (1 Agree to a great extent, 2 Agree to a certain extent, 3 Disagree to a certain extent, 4 Disagree to a great extent). Lower scores indicate more agreement.
*** Scale 1-4 (1 Always/almost always, 2 Often, 3 Rarely, 4 Never/almost never). Lower scores indicate more support.

A multiple regression analysis was conducted for the variables that significantly correlated with self-estimated ability to return to work (Table 6). The model showed 23% of variance being shared with the dependent and independent variables (R square=0.26, Adjusted R square 0.23, F=9.55 p <0.001). Significant Beta and B values were found for three variables: Feeling strengthened in the situation, Feeling happy and, Been encouraged about paid work.

Table 6. B, Beta and p-values for the independent variables from the multiple regression analysis with self-estimated ability to return to work as dependent variable*.

Questionnaire item	B	Beta	p.
Liked**	-0.05	-0.04	0.59
Strengthened in my situation**	0.28	0.21	0.02
Energetic**	0.09	0.08	0.28
Relieved/reassured**	-0.03	-0.02	0.80
Optimistic**	0.10	0.09	0.33
Appreciated**	-0.11	-0.09	0.31
Respected**	-0.14	-0.10	0.18
Contended**	-0.04	-0.03	0.75
Happy**	0.25	0.24	0.02
Proud**	-0.09	-0.09	0.29
Received useful information***	0.07	0.05	0.35
Received useful advice and support about work***	0.05	0.06	0.31
Received encouragement about work***	0.28	0.32	<.001

* **Scale 1-6 (1 Was not positively encountered, 2 Impeded much, 3 Impeded to a certain extent, 4 No impact, 5 Facilitated to a certain extent, 6 Facilitated much). Higher scores indicate more positive impact.**

** Scale 1-4 (1 Agree to a great extent, 2 Agree to a certain extent, 3 Disagree to a certain extent, 4 Disagree to a great extent). Lower scores indicate more agreement.

*** Scale 1-4 (1 Always/almost always, 2 Often, 3 Rarely, 4 Never/almost never). Lower scores indicate more support.

Emotions evoked by negative encounters were not significantly correlated with impact of positive encounters on self-estimated ability to return to work (r between -0.05 and 0.12, p between 0.3 and 0.9). Furthermore, 'Received encouragement about being on sick leave' was not significantly correlated with the self-estimated ability to return to work (r=-0.02, p=.73).

DISCUSSION

The results of the present study demonstrate that when people on sick leave due to heart failure perceive they are positively encountered by healthcare professionals it can enhance their perceptions of being able to return to work. In addition, to feel happy or strengthened in the situation can predict self-estimated ability to return to work. In addition, it has been described that if healthcare professionals show sick listed people that they believe in their ability to work the perception of being facilitated back to work increases[18, 26]. All this can contribute to patient empowerment.

Patient empowerment can be defined in a variety of ways. One basic assumption is that positive emotions, such as feeling strengthened or happy, can contribute to patient empowerment[29]. Furthermore, patient empowerment has been described as both a process and an outcome implying patients' active participation in their own healthcare[30]. This signifies that sick listed persons' inner resources can be strengthened through interactions with other people[20]. Patient empowerment has also been described as an activity that involves "recognition and active support of the patient's ability and responsibility to self-manage his or her disease"[31] (p. 5). It has also been described that healthcare professionals can facilitate patient empowerment by acknowledgement of the patients' perceived ability to handle important aspects of her or his health or disease[32]. Healthcare professionals can also participate in the patients' process of change by bringing their own knowledge to the situation[32]. In addition, healthcare professionals can activate and encourage patients to take own responsibility for their health concerns, to take actions to improve health and to become experts in self-management of their own health[31]. Practical ways of doing this can be by providing educational programs, patient activation or health promotion interventions[31]. See for example, Shearer, Cisar and Greenberg[32] that found that a telephone-delivered empowerment intervention facilitated self-care in people with heart failure. Lynoe, Wessel, Olsson[(16] describe that patients can experience healthcare encounters as more positive if they also feel respected. On the contrary, encounters can be perceived as more negative if the patients are feeling wronged[16]. In the present study none of these emotions were identified as predictors for the self-estimated ability to return to work for people with heart failure. This can possibly be explained by the different populations in the different studies.

Concerning the population in the present study, though, people with heart failure are often offered participation in cardiac rehabilitation programs that have the main focus on medication, self-care, physical activity or patient education[21]. However, information about

how to manage the work situation is often limited implying that the patients can experience that they are abandoned by the healthcare professionals with regard to their return to work processes[33]. The results of the present study show that experiences of being encouraged about work correlated with the perception of being able to return to work. In a recent study about women with breast cancer it was found that women who had been encouraged to work had lower risk of sick leave and also higher work capacity[34]. In the current study these associations were not examined.

One challenge, though, for healthcare organizations is to develop rehabilitation programs for patients with heart failure that include not only medical treatment, self-care and physical activity. Instead there is a need for psycho-social interventions that can support the patients' return to work processes when possible[35] for example through psychologically strengthening patients in their situation, and providing encouragement for their return to work. Another challenge is that even though physicians, and especially physicians within primary care, are responsible for sickness certification and assessments of patients' work ability[36, 37], they do not perceive work integration or vocational rehabilitation as part of their assignment[38, 39]. Other challenges involve boundaries between professions[39]. Even though sick listing is mainly dealt with by physicians, other healthcare professionals are also more or less involved. For example, nurses are frequently contacted by patients concerning sick-listing issues[39] and assess appropriate actions regarding sick-listing and physiotherapists are often involved in the management of the patients' physical limitations[38, 39]. Suggested interventions for improvement and optimal tailoring of patients' sick leave and/or return to work processes include training and education for physicians[36, 37], availability to multi-disciplinary teams[37-39] and also case management[37]. On the basis of the present results no conclusions can be drawn about how to best design rehabilitation program for patients on sick leave due to heart failure.

Subsequently, in order to identify how the management of sick leave and return to work can be optimized more intervention studies are needed.

Conclusions

Positive encounters with healthcare professionals that result in feelings of being strengthened or happy or to receive encouragement about return to work can promote heart failure patients' perceptions about their ability to return to work. It is important to note that the present study investigated patients' perceptions of how different encounters influenced their ability to work. Accordingly, the actual return to work rate was not investigated. To some degree the results have enhanced our understanding about factors that possibly affect rehabilitation and return to work for people with heart failure, but further studies are needed. In particular, intervention studies are needed.

Contributors

LN and AS conceived and designed the study, analysed the data, interpreted the results, and wrote the manuscript.

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Competing Interests

The authors declare that they have no competing interests to disclose.

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Data sharing statement

No additional data are available.

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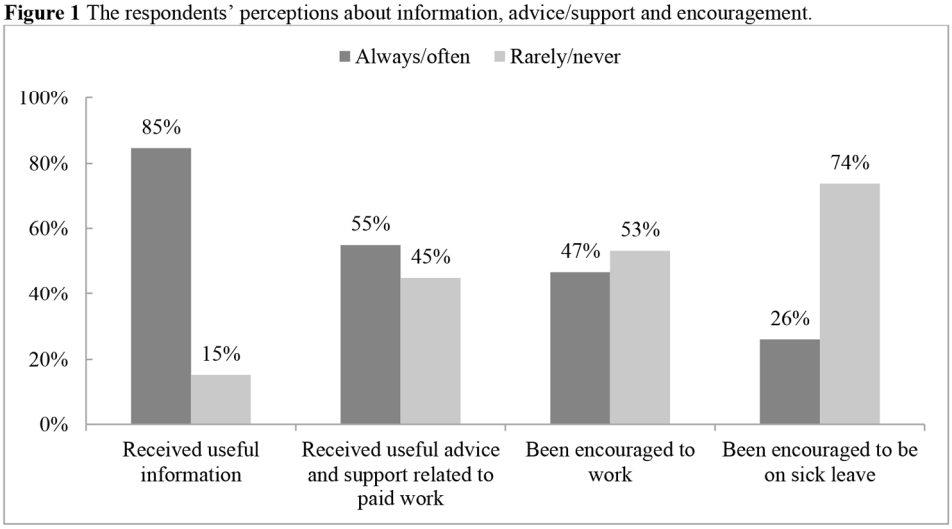
Figure 1 The respondents' perceptions about information, advice/support and encouragement.



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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	1-2
Objectives	3	State specific objectives, including any prespecified hypotheses	2
Methods			
Study design	4	Present key elements of study design early in the paper	2
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	2-3
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	3
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	NA
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	3-5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	3-5
Bias	9	Describe any efforts to address potential sources of bias	3-5
Study size	10	Explain how the study size was arrived at	3
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5

		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5-11
		(b) Give reasons for non-participation at each stage	5-11
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5-6
		(b) Indicate number of participants with missing data for each variable of interest	5-11
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	
		Cross-sectional study—Report numbers of outcome events or summary measures	5-11
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	5-11
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	11-13
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	11-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	11-13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	14

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.