The association between self-efficacy and sick-leave among men and women: a cross-sectional study of the general working population in Sweden

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ABSTRACT

BACKGROUND: The aim of this study was to investigate if low self-efficacy was associated with increased risk of sick-leave, in a general population of employed women and men. The aim was also to analyse differences in self-efficacy concerning age, education, income, and socio-economic position.
METHODS: This cross-sectional study was based on data collected in western Sweden, 2008. The study population consisted of 2,900 employed sick-listed individuals (E-SL) and 2,649 random working population individuals (R-WP). Both mailed questionnaire, including the General Self-Efficacy Scale (GSE) and register data on age, education, income and socio-economic position were used. A continuous mean score of the total GSE was calculated for each individual. A low GSE-score indicated low general self-efficacy.
RESULTS: Lower general self-efficacy had an increased odds ratio (OR) of belonging to a sick-listed general working population among both men (OR=1.60; 95% CI 1.32–1.94) and women (OR=1.26; 95% CI 1.08–1.47). The OR remained significant after adjustments for socio-demographic variables. Yet, men in the R-WP and women in both the R-WP and E-SL with lower education, income or socio-economic position had lower general self-efficacy compared with those in each cohort with higher education, income or socio-economic position.
CONCLUSIONS: Low self-efficacy was associated with increased probability of belonging to a sick-listed general working population. Although more research is needed, it seems highly relevant to take both self-efficacy and socio-economic factors into account in preventive and rehabilitation work targeting people on sick-leave.

Key words: Self-efficacy, sick-leave, socio-economic factors, general population, employed

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INTRODUCTION

The costs of sick-leave in Sweden is high and over half a million people, approximately 10% of the Swedish work-force, are absent from work due to illness and disability [1]. Sick-leave does not only affect the economy of the society but also has deleterious consequences on people's quality of life [2]. Several studies have also shown an association between lower socio-economic status and higher rates of sick-leave [3-5]. However, little is known on how personal characteristics, such as self-efficacy, influence sick-leave, especially in relation to socio-economic status.

Self-efficacy is a concept that has been considered to have an impact on health behaviour and rehabilitation [6-8]. The concept has a central role in Bandura's social cognitive theory [6,9] and refers to the idea that the person's own confidence in changing behaviours or situations is decisive on the outcome. In other words, the stronger the self-efficacy, the higher are the possibilities of success. Research focusing on self-efficacy and health has indicated that health behaviour among the chronically ill can be improved and that self-efficacy can be used as a tool to improve the outcome of chronic diseases [7]. These studies concern self-efficacy in specific domains or situations. Other studies have focused on a more generalised sense of self-efficacy that refers to a broad sense of self-confidence in dealing with stressful situations and challenging demands [10,11].

Sick-listed workers' self-efficacy and expectations have also been linked to return to work possibilities [12-14], and high self-confidence and belief in returning to work and self-efficacy predict an early return to work. Yet, little research has focused on whether there initially are any differences between newly sick-listed employees and employees in a general working population. In one study, targeting men and women sick-listed due to musculoskeletal disorders, low self-efficacy, in terms of a low sense of mastery, was associated with prolonged sick-leave [15]. In another study, Labriola et al. [16] found that general self-efficacy was lower in a group of employed sick-listed people compared to the general working population. These are the only two studies on the association between sick-leave and self-efficacy. To find tools preventing long-term sick-leave we do need to further explore the relevance of self-efficacy for sick-leave.

The socio-economic status in terms of level of education, occupational class and income has in previous studies been related to sick-leave [3-5]. In a register-based study in Finland, a high level of education, the occupational class of the employee, such as manager or professional, and high income were associated with lower sick-leave among both men and women [4]. Similar findings were reported by Laaksonen et al. [5], who found that sick-leave was more common among manual workers than among managers and professionals in both men and women. Little is known on perceived self-efficacy with respect to diverse socio-economic groups. In one study on women with breast cancer, a higher educational level was found to be associated with better general self-efficacy [17]. No information is available on how socio-economic factors may affect the association between sick-leave and self-efficacy in the general working population.

Research on the association between general self-efficacy, socio-demographic factors and sick-leave is limited, especially studies targeting a general working population of men and women. The main aim of this study was to investigate if low self-efficacy was associated with increased risk of sick-leave, in a general population of employed women and men. The aim was also to analyse differences in self-efficacy concerning age, education, income, and socio-economic position.

METHODS

This cross-sectional study was a part of the 'Health Assets Project' (HAP), a longitudinal study on health, sickness absence and work [18]. Baseline data was collected by way of a postal questionnaire distributed between 15th of April 2008 and 30th of June 2008 in the Västra Götaland Region, Sweden. This region includes both urban and rural areas, with a population of approximately 1.6 million (17% of the Swedish population) at the time of the study. The postal questionnaire consisted of questions concerning socio-demographic factors, employment, general self-efficacy, sick-leave and working life. Two reminders were sent out. Additionally, socio-demographic variables such as gender, age and income were collected from the register of Statistics

Sweden. A pilot study and a cognitive test were performed on a sample from Statistics Sweden corresponding with the final target group of the questionnaire. HAP was approved by the Ethical Review Board in Gothenburg, Sweden: registration number 039-08. More detailed information on study procedure of HAP is published elsewhere [18].

Study population

The study base comes from two different cohorts (19–64 years) originating from the general population in the Västra Götaland Region, Sweden: an employed sick-listed cohort (E-SL) and a random population cohort (R-WP) (Figure 1). The E-SL was identified by the Swedish Social Insurance Agency (SSIA). The random population cohort was identified by Statistics Sweden, and was randomly selected from the Register of the Total Population [19]. The R-WP represented 0.5% of the population in the region (n=7,984). In Sweden, the first 14 days, except for one qualifying day, of sick-leave spells for the gainfully employed are covered by the employee. From day 15 the sickness benefits are paid by the SSIA. Irrespective of

the reasons for the sick-leave, all consecutively newly registered sick-listed individuals (≥15 days) were identified and included by the SSIA during a period from 18th of February 2008 to 15th of April 2008 (n=6,140).

All in all, 3,310 of the E-SL cohort and 4,027 of the R-WP cohort participated, leaving a response rate of 50.4% and 53.9% respectively. The drop-out pattern was similar for both cohorts. The drop-out rate was higher among men (drop-out = 55%), in the younger age-group 19–30 years (men 67%, women 49%), among people with the lowest income, ≤149,000 SEK/year (men 67%, women 52%), and among those born outside Sweden and the other Nordic countries (men 64%, women 57%).

The study population of this study were those who, at the baseline data collection, stated that they were employed and working, and who also answered the General Self-Efficacy Scale (GSE) [10]. So, from the study base 410 people (36% men and 64% women) were excluded in E-SL cohort and 1,378 (44% men and 56% women) in the R-WP cohort. The final study population consisted in E-SL of 2,900 (33% men and 67% women), and in R-WP of 2,649 (45% men and 55% women). The study population procedure is presented in Figure 1.

FIGURE 1

FLOW CHART OF SELECTION PROCESS TO STUDY POPULATION FOR SICK-LISTED & RANDOM POPULATION COHORTS, 2008
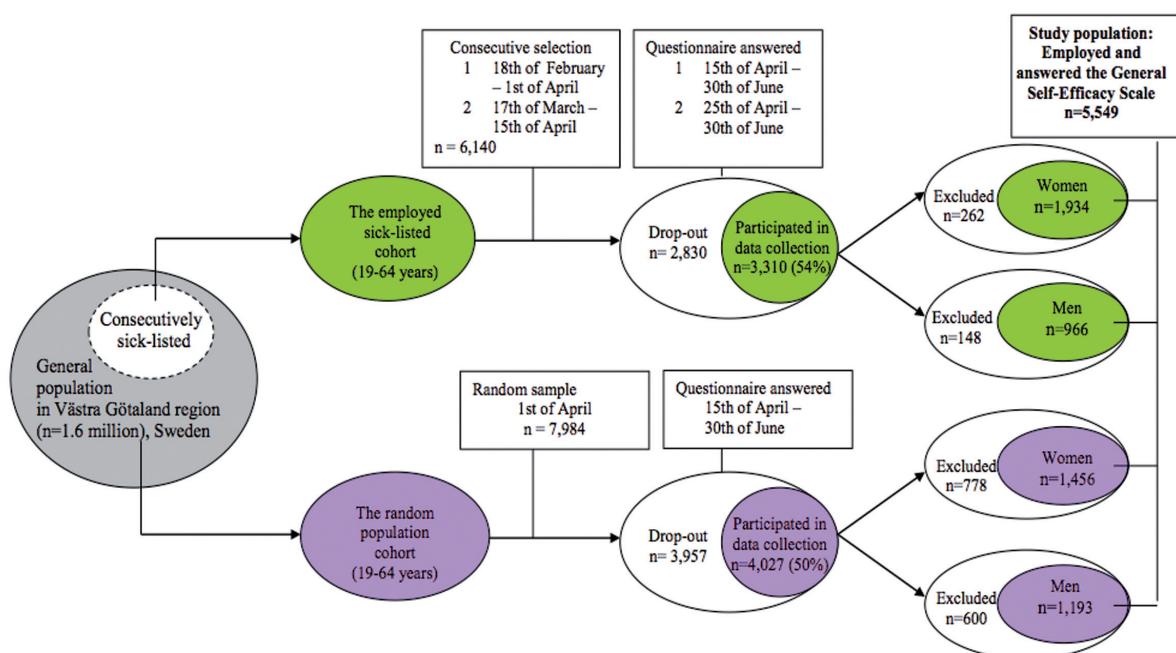
Assessments

Self-efficacy was the independent variable, measured by the GSE [10]. GSE is an instrument assessing one's self-efficacy to cope with a variety of stressful situations and challenging demands. This instrument has been used in several international studies [11], and been found to have high validity and reliability [11, 20]. GSE contains ten items with four response categories ranging from 'exactly true' to 'not at all true'. For each individual the score for all items was summed up and divided by the number of items creating a continuous mean score ranging from 1–4. A low GSE-score indicated low general self-efficacy. Individuals with missing values on one or more items on GSE were excluded.

The following registered socio-demographic characteristics were identified from Statistics Sweden: age (19–30, 31–50, 51–64 years) and income (≤ 149,000, 150,000-299,000, 300,000 SEK), and the self-reported variables identified from the questionnaire: education (university, high school, secondary school) and socio-economic position (higher non-manual, intermediate/low non-manual, skilled/non-skilled manual).

Dependent variable

In the logistic regression models we estimated the OR for belonging to the employed sick-listed cohort.

Statistical analyses

The analyses were performed using SPSS version 19 (Statistical Package for Social Sciences). All analyses were carried out separately for men and women [21, 22]. The internal consistency of GSE in E-SL, tested with Cronbach's alpha [23, 24], was 0.92 for men and 0.91 for women. The corresponding values in the R-WP were 0.90 for both men and women.

Chi2-tests were used in the descriptive analyses to examine differences in the proportions between the E-SL and R-WP cohorts due to age, education, income, and socio-economic position [25]. Differences in the mean scores of self-efficacy concerning age, education, income, and socio-economic position were then examined within the E-SL and R-WP cohorts respectively. This was done with one-way ANOVA analysis using Tukey's honest significance test [25]. Logistic regression models were used to analyse the possible association of belonging to the E-SL cohort or not (dependent variable; E-SL=1 and R-WP=0) and low self-efficacy (independent variable: GSE score), as well as to be able to control for socio-demographic variables [26]. First, a univariate logistic regression model was constructed for men and women respectively to analyse any association between self-efficacy and belonging to the E-SL (Univariate Model). To adjust for socio-demographic variables two forward multiple logistic regression models were created: Multiple Model 1 adjusted for age and Multiple Model 2 for education, income and socio-economic position.

RESULT

A higher proportion of men in the E-SL cohort were in the oldest age group (51-64 years), compared with men in the R-WP cohort (33% versus 47%). Compared with the men in the R-WP, a lower proportion of men in the E-SL had a university education, high income (≥300 000 SEK/year) and was employed in non-manual work (Table 1).

Among women in the E-SL cohort, a higher proportion was in the oldest age group compared with the women in the R-WP cohort (42% versus 36%) (Table 1). A lower proportion of the women in the E-SL had a university education than the women in the R-WP had (40% versus 45%). Compared with the women in the R-WP, a lower proportion of women in the E-SL had an income of ≤149,000 SEK/year and ≥300,000 SEK/year (Table 1). Of the women in the E-SL, a higher proportion was employed in skilled/non-skilled manual work compared with women in the R-WL (46% versus 37%).

Differences in general self-efficacy concerning socio-demographic characteristics within the employed sick-listed cohort and within the random working population cohort

Among men, table 2 shows that those in the R-WP with the lowest education had a

TABLE 1

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS IN THE EMPLOYED SICK-LISTED (E-SL) COHORT (n=2,900) AND THE RANDOM WORKING POPULATION (R-WP) COHORT (n=2,649), FOR MEN AND WOMEN RESPECTIVELY	MEN		WOMEN	
	E-SL COHORT n (%)	R-WP COHORT n (%)	E-SL COHORT n (%)	R-WP COHORT n (%)
TOTAL	966	1,193	1,934	1,456
AGE (YEARS) [a]	***	***	***	***
19–30	121 (12)	207 (17)	202 (10)	210 (14)
31–50	394 (41)	593 (50)	926 (48)	724 (50)
51–64	451 (47)	393 (33)	809 (42)	522 (36)
EDUCATION [a]	***	***	*	*
≥ UNIVERSITY	202 (21)	418 (35)	773 (40)	643 (45)
HIGH SCHOOL	466 (49)	579 (49)	773 (40)	569 (39)
≤ SECONDARY SCHOOL	282 (30)	190 (16)	371 (20)	232 (16)
INCOME/YEAR (SEK) [a]	***	***	***	***
≤ 149,000	61 (6)	115 (10)	204 (11)	218 (15)
150,000-299,000	540 (56)	506 (42)	1413 (73)	910 (62)
≥ 300,000	365 (38)	572 (48)	317 (16)	328 (23)
SOCIO-ECONOMIC POSITION [a]	***	***	***	***
HIGHER NON-MANUAL	103 (11)	254 (22)	216 (11)	227 (16)
INTERMEDIATE/LOW NON-MANUAL	220 (23)	388 (33)	813 (43)	684 (47)
SKILLED/NON-SKILLED MANUAL	624 (66)	532 (45)	889 (46)	525 (37)

a) Chi2-test: proportions between the cohorts for men and women respectively;

* p<0.05, *** p<0.001

significantly lower GSE compared with those who had a university or a high school education in the R-WP. Men in the R-WP with an income of 150,000–299,000 SEK also had a lower GSE than those with the highest yearly income (≥ 300,000 SEK). Compared with men employed in higher non-manual work, men in the R-WP employed in skilled/non-skilled manual work had a lower GSE. No such differences were found in the E-SL.

In the E-SL cohort, women with a lower education had a lower GSE than women with a higher education (Table 2). This was also observed among the women in the R-WP. Women in E-SL with a lower yearly income had a lower GSE compared with women with the highest yearly income (≥ 300,000 SEK) in this cohort. This pattern was also seen among the women in the R-WP. In the E-SL cohort, women employed in lower socio-economic positions had a lower GSE than women in higher non-manual work. Women in the R-WP, employed in skilled/non-skilled manual work

had a lower GSE compared with women in the R-WP employed in non-manual work (Table 2).

The association between self-efficacy and sick-leave for men and women

For men, a lower general self-efficacy was associated with a higher OR to belong to the E-SL in the initial univariate logistic regression model 1.60 (95% CI 1.32–1.94) (Table 3). This OR remained when the model was controlled for age (Multiple Model 1: OR=1.60 (95% CI 1.31–1.94). The OR for ≤30 years was 0.52 (95% CI 0.40–0.67) and for 31–50 years 0.58 (95% CI 0.48–0.69). When the socio-economic variables were introduced to the model, the OR for GSE changed to 1.44 (95% CI 1.18–1.77) (Multiple Model 2), but was still significant. Significant socio-economic variables were higher education (university OR 0.58, 95% CI 0.43–0.79 and high school OR 0.64, 95% CI 0.51–0.80), low income (OR 0.69, 95% CI 0.48–0.98), and non-manual

TABLE 2

GENERAL SELF-EFFICACY SCORE DISTRIBUTED IN SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS IN THE EMPLOYED SICK-LISTED (E-SL) COHORT (n=2,900) AND RANDOM WORKING POPULATION (R-WP) COHORT (n=2,649), FOR MEN AND WOMEN RESPECTIVELY				
	MEN		**WOMEN**	
	E-SL COHORT	**R-WP COHORT**	**E-SL COHORT**	**R-WP COHORT**
	GSE (SD)	**GSE (SD)**	**GSE (SD)**	**GSE (SD)**
TOTAL	2.95 (0.47)	3.04 (0.43)	2.88 (0.46)	2.92 (0.43)
AGE (YEARS) [a]				
19–30	2.97 (0.49)	3.08 (0.44)	2.92 (0.49)	2.97 (0.42)*
31–50	2.92 (0.48)	3.04 (0.41)	2.89 (0.48)	2.94 (0.41)
51–64	2.97 (0.45)	3.02 (0.45)	2.85 (0.43)	2.88 (0.46)*
EDUCATION [a]				
≥ UNIVERSITY	3.00 (0.48)	3.07 (0.44)**	2.95 (0.44)[b]***, [c]***	2.99 (0.41)[b] ***, [c]***
HIGH SCHOOL	2.93 (0.44)	3.04 (0.42)*	2.86 (0.47)[b]***, [d]***	2.89 (0.44)[b]***, *
≤ SECONDARY SCHOOL	2.95 (0.47)	2.96 (0.43)**,*	2.75 (0.46)[c]***, [d]***	2.81 (0.43)[c]***, *
INCOME/YEAR (SEK) [a]				
≤ 149,000	3.00 (0.50)	3.09 (0.42)	2.86 (0.51)**	2.90 (0.44)**
150,000–299,000	2.92 (0.48)	2.99 (0.47)**	2.85 (0.46)***	2.89 (0.43)***
≥ 300,000	2.99 (0.43)	3.07 (0.39)**	3.01 (0.41)**, ***	3.03 (0.42)**, ***
SOCIO-ECONOMIC POSITION [a]				
HIGHER NON-MANUAL	2.97 (0.44)	3.12 (0.38)***	3.00 (0.44)**, ***	3.01 (0.42)[b]***
INTERMEDIATE/LOW NON-MANUAL	3.00 (0.46)	3.05 (0.42)	2.88 (0.46)**	2.95 (0.42)[c]***
SKILLED/NON-SKILLED MANUAL	2.92 (0.47)	3.00 (0.44)***	2.84 (0.47)***	2.84 (0.45)[b]***, [c]***

GSE = General Self-Efficacy Scale, * p<0.05, ** p<0.01, *** p<0.001
a) Differences within the two cohorts: ANOVA-test (Tukey's honest test); b), c) and d) show where the differences are

TABLE 3

LOGISTIC REGRESSION MODEL ANALYSES THE ASSOCIATION BETWEEN LOW SELF-EFFICACY AND SICK-LEAVE						
	MEN			**WOMEN**		
	n=2,159			**n=3,390**		
Independent variable	**Univariate Model** OR (95% CI)	**Multiple Model 1** OR (95% CI)	**Multiple Model 2** OR (95% CI)	**Univariate Model** OR (95% CI)	**Multiple Model 1** OR (95% CI)	**Multiple Model 2** OR (95% CI)
Low General Self-Efficacy	1.60 (1.32-1.94)***	1.60 (1.31-1.94)***	1.44 (1.18-1.77)***	1.26 (1.08-1.47)*	1.24 (1.06-1.44)*	1.18 (1.00-1.38)*

Dependent variable: Belonging to the employed sick-listed cohort = 1and belonging to the random working population cohort = 0; Independent variable: low General Self-Efficacy; 1) Included only: currently sick-listed in the employed sick-listed cohort and not currently sick-listed in the random working population cohort; Univariate Model = un-adjusted odds ratios; Multiple Model 1 = Controlled for age; Multiple Model 2 = Controlled for socio-economic variables (education, income and socio-economic position); CI, 95% confidence interval; OR, odds ratio; * p<0.05, *** p<0.001

work (higher non-manual OR=0.45, 95% CI 0.33–0.62; intermediate/low non-manual OR=0.58, 95% CI 0.46–0.74).

For women, an initial univariate logistic

regression model showed that a lower general self-efficacy was associated with a higher OR to belong to the E-SL (OR=1.26; 95% CI 1.08–1.47) (Table 3). When age was introduced to the model, the OR for GSE remained significant (Multiple Model 1: OR=1.24; 95% CI 1.06–1.44). The OR for ≤30 years was 0.63 (95% CI 0.51–0.79) and for 31–50 years 0.84 (95% CI 0.72–0.97). The OR for GSE changed to 1.18 (95% CI 1.00–1.38), but remained significant, for women when the socio-economic variables were introduced to the model (Multiple Model 2). Significant socio-demographic variables were middle income (OR 1.36, 95% CI 1.12–1.64), and non-manual work (higher non-manual OR 0.55, 95% CI 0.42–0.72; intermediate/low non-manual OR 0.67, 95% CI 0.56–0.80).

DISCUSSION

The main finding of this study was that low general self-efficacy showed an association with increased probability of belonging to a sick-listed general working population in both men and women. This finding remained significant after the adjustment for socio-demographic variables. No study, so far, has been conducted on the importance of general self-efficacy dimensions in relation to sick-leave in a newly sick-listed cohort. Our findings do, however, confirm the results from Labriola et al. [16], where general self-efficacy was measured with parts of the general self-efficacy scale in a general population, and from Busch et al. [15], who measured self-efficacy in a sample with nonspecific chronic musculoskeletal disorders. Labriola et al. [16] discuss the possibilities that low general self-efficacy among the sick-listed is a consequence of the sick-leave itself, rather than a cause for it. This aspect is important to consider, especially for healthcare professionals working with sick-listed clients. A study on a full-time multidisciplinary program using self-efficacy training showed that sick-leave declined after intervention, as compared to matched controls [27]. Other studies on interventions directed to chronic disability or specific diagnoses have also shown that self-efficacy can be used as a tool to improve chronic health outcomes [7,28]. However, more research, particularly intervention studies, using self-efficacy as a tool, and targeting a sick-listed population, is required.

In this study, the socio-demographic characteristics differed between the two study groups: in the E-SL the participants were older, had lower educational levels, income and socio-economic positions compared to the R-WP. The results of the social gradient on sick-leave correspond with several studies [3-5]. However, we also found that the level of self-efficacy differed between different socio-demographic groups. In the R-WP, we found lower self-efficacy among both men and women with lower educational levels, income and socio-economic positions. Additionally, women in the E-SL with lower income and lower socio-economic positions had a lower self-efficacy. Previous research [15, 16] on sick-leave and self-efficacy did not include detailed information on the influence of socio-economic status. Whereas the social gradient on sick-leave is known, no previous research on general self-efficacy differences between socio-demographic groups has been carried out. Our findings are novel and contribute to an identified knowledge gap.

Self-efficacy was defined by Bandura as people's perception of their abilities to organize and carry through with certain actions in order to achieve specific goals [6,9]. Based on Bandura's social cognitive theory and self-efficacy, health education programs have been successful in improving quality of life and functional capacity in chronically disabled people [7]. Additionally, some evidence has been found for rehabilitation programs targeting sick-listed people that show self-efficacy training to be successful in reducing sick-leave [27]. Since sick-leave contributes largely to both the direct and indirect costs for society as well as for the individual [1,29] much more research is needed in this field. Especially, evaluating rehabilitation programmes targeting people on sick-leave and taking both self-efficacy and socio-economic factors into account seem to be highly relevant.

Methodological considerations

One of the most important strengths of this study is the selection and the use of the two cohorts. As far as we know, no studies are available focusing on self-efficacy in a cohort of consecutively newly sick-listed individuals representing a variety of occupations. Also, the association between self-efficacy and sick-leave

has not, until now, been analysed using a cohort of new sick-leave cases and a random cohort from the general working population. Although our study had a rather high and systematic drop-out rate it was similar in both cohorts. Therefore, the comparisons between the cohorts should not be biased by this. The selection of the study base is also less biased than it would have been if only sick-listed individuals with a specific diagnose were included. The results from this study may be generalised to a larger general working population. This study is cross-sectional and conclusions regarding causality cannot be drawn.

Furthermore, our study used data collected with the GSE scale, which has been validated and has high reliability in several countries in different settings and populations [11, 20]. The GSE scale in our study also showed high internal consistency in the two cohorts for men and women respectively. However, it is important to be cautious with the validity of self-reported data. The GSE has answers on a pre-coded scale. There is a possibility that some of the participants may have felt pressed to choose a defined answer [24]. It can, however, be argued that the attitude towards participating and answering the GSE is positive in this study population since the internal drop-out, i.e. missing values on the GSE, was low [30]. It is also important to notice that the outcome originated from register data.

Missing responses on the GSE scale from one or more items meant exclusion of that person from our study. However, this procedure differs somewhat from the recommended way of handling missing responses on the GSE scale, which is to calculate a mean of the missing items if three or less answers are missing [10]. Although this way of excluding people

with missing values has been used for other questionnaires, such as the Short-Form 36 [24], the validity when using it in the GSE scale has not been fully evaluated [11, 20]. It can also be argued that there might be a reason why these individuals did not respond to certain questions in the GSE scale. This could have introduced a systematic bias if individuals who chose not to answer certain items of the GSE scale were from specific socio-demographic groups [24]. Our way of handling missing responses resulted in 258 missing answers, compared with 113 if the recommended way had been used.

CONCLUSIONS

Low self-efficacy was associated with increased probability of belonging to a sick-listed general working population, in both men and women. Although a weaker socio-economic position meant lower self-efficacy, this did not affect the association between self-efficacy and sick-leave. Due to the large costs of sick-leave, it ought to be relevant to take both self-efficacy and socio-economic factors into account in preventive and rehabilitation work, targeting people on sick-leave. To be able to investigate the causality of the association between self-efficacy and sick-leave, prospective studies are needed.

CONFLICT OF INTEREST: *The authors declare that there is no conflict of interest.*

References

[1] The Swedish Social Insurance Agency (Försäkringskassan). Social Insurance in Figures 2008. Stockholm 2009.

[2] Lydell M, Marklund B, Baigi A, Mattsson B, Mansson J. Return or no return--psychosocial factors related to sick leave in persons with musculoskeletal disorders: a prospective cohort study. Disabil Rehabil 2011;33(8):661-6.

[3] Christensen KB, Labriola M, Lund T, Kivimaki M. Explaining the social gradient in long-term sickness absence: a prospective study of Danish employees. J Epidemiol Community Health 2008;62(2):181-3.

[4] Piha K, Laaksonen M, Martikainen P, Rahkonen O, Lahelma E. Interrelationships between education, occupational class, income and sickness absence. Eur J Public Health 2010 ;20(3):276-80.

[5] Laaksonen M, Piha K, Rahkonen O, Martikainen P, Lahelma E. Explaining occupational class differences in sickness absence: results from middle-aged municipal employees. J Epidemiol Community Health 2010;64(9):802-7.

[6] Bandura A. Self-efficacy: toward a unifying theory of behavioral change. Psychol Rev. 1977;84(2):191-215.

[7] Marks R, Allegrante JP, Lorig K. A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: implications for health education practice (part II). Health Promot Pract 2005;6(2):148-56.

[8] Thomee P, Wahrborg P, Borjesson M, Thomee R, Eriksson BI, Karlsson J. Determinants of self-efficacy in the rehabilitation of patients with anterior cruciate ligament injury. J Rehabil Med 2007;39(6):486-92.

[9] Bandura A. Health promotion by social cognitive means. Health Educ Behav 2004 ;31(2):143-64.

[10] Schwarzer R, Jerusalem M. Generalizes Self-Efficacy scale. In: Weinman J, Wright S, Johnston M, editors. Measures In Health Psychology Portfolio. Windsor, UK: NFER-NELSON; 1995:35-7.

[11] Scholz U, Gutiérrez-Doña B, Sud S, Schwarzer R. Is General Self-efficacy a Universal Construct? Psychometric Findings from 25 countries. Eur J Psychological Assessment 2002;18(3):242-51.

[12] Heijbel B, Josephson M, Jensen I, Stark S, Vingard E. Return to work expectation predicts work in chronic musculoskeletal and behavioral health disorders: prospective study with clinical implications. J Occup Rehabil 2006;16(2):173-84.

[13] Heymans MW, de Vet HC, Knol DL, Bongers PM, Koes BW, van Mechelen W. Workers' beliefs and expectations affect return to work over 12 months. J Occup Rehabil 2006;16(4):685-95.

[14] Brouwer S, Reneman MF, Bultmann U, van der Klink JJ, Groothoff JW. A prospective study of return to work across health conditions: perceived work attitude, self-efficacy and perceived social support. J Occup Rehabil 2010;20(1):104-12.

[15] Busch H, Goransson S, Melin B. Self-efficacy beliefs predict sustained long-term sick absenteeism in individuals with chronic musculoskeletal pain. Pain Pract 2007;7(3):234-40.

[16] Labriola M, Lund T, Christensen KB, et al. Does self-efficacy predict return-to-work after sickness absence? A prospective study among 930 employees with sickness absence for three weeks or more. Work 2007;29(3):233-8.

[17] Rottmann N, Dalton SO, Christensen J, Frederiksen K, Johansen C. Self-efficacy, adjustment style and well-being in breast cancer patients: a longitudinal study. Qual Life Res 2010;19(6):827-36.

[18] Holmgren K, Hensing G, Dellve L. The association between poor organizational climate and high work commitments, and sickness absence in a general population of women and men. J Occup Environ Med 2010;52(12):1179-85.

[19] Statistics Sweden. The Register of the Total Population. Available from http://www.scb.se/Pages/List-257499.aspx. [Last accessed May 2012].

[20] Love J, Moore CD, Hensing G. Validation of the Swedish translation of the general self-efficacy scale. Qual Life Res 2012; 21 (7): 1249-53.

[21] Hensing G, Alexanderson K. The association between sex segregation, working conditions, and sickness absence among employed women. Occup Environ Med 2004;61(2):e7.

[22] Jonsson R, Lidwall U, Holmgren K. Does unbalanced gender composition at the work place influence the association between psychosocial working conditions and sickness absence?. Work 2012; 46: 59-66.

[23] Cortina J. What is Coefficient alpha? An examination of theory and applications. J Applied Psychol 1993; 78(1):98-104.

[24] Bowling A. Research methods in health. Berkshire, UK: Open University Press,2002.

[25] Altman D. Practical statistics for medical research. Boca Raton: CRC Press, 1999.

[26] Hosmer D, Lemeshow S. Applied Logistic Regression. New York: John Wiley & Sons, 2000.

[27] Jensen IB, Busch H, Bodin L, Hagberg J, Nygren A, Bergstrom G. Cost effectiveness of two rehabilitation programmes for neck and back pain patients: A seven year follow-up. Pain 2009;142(3):202-8.

[28] Varekamp I, Verbeek JH, de Boer AG, van Dijk FJ. Effect of job maintenance training program for employees with chronic disease - a randomized controlled trial on self-efficacy, job satisfaction, and fatigue. Scan J Work, Environ & Health 2011; 37(4):288-97.

[29] Kivimaki M, Head J, Ferrie JE, Shipley MJ, Vahtera J, Marmot MG. Sickness absence as a global measure of health: evidence from mortality in the Whitehall II prospective cohort study. BMJ 2003;327(7411):364.

[30] Golden C, Sawicki R, Franzen M. Test construction. In: Goldstein G, Hersen M, editors. Handbook of psychological assessment. New York: Pergamon Press Inc., 1990:21-40.

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