Published in International Journal of Disability Management

Interrelated factors for return to work of sick-listed employees in Sweden

John Selander (corresponding author), PhD, Dept of Health Sciences, +46 702163568,
john.selander@miun.se, Mid-Sweden University, Östersund, Sweden

Jing Sun PhD, School of Medicine and Menzies Health Institute Queensland, Griffith University,
Parkland Drive, Gold
Coast, QLD 4222, Australia

Asa Tjulin, PhD, Dept of Health Sciences, Mid-Sweden University, Östersund, Sweden

Nicholas Buys PhD Menzies Health Institute Queensland, Griffith University, Gold
Coast, QLD 4222, Australia

There are no acknowledgements, financial support, or competing interest that may identify the authors.

The manuscript is original and solely send to IJDM

All authors have read and accepted the manuscript.

Interrelated factors for return to work of sick-listed employees in Sweden

Word count: 4 594 words

ABSTRACT

Purpose: Long term sickness absence is a significant human and economic cost in many countries, including Sweden making research on factors which impact on return to work (RTW) relevant. This study has two aims: (1) Provide an overview of factors that impact RTW expectations in a national sample of Swedish workers on long term sickness absence, and (2) Gain an understanding of the interrelationships among these factors using a socio-ecological framework and decision tree analysis. *Method:* A survey, designed to capture information about demographic variables, health and work ability, workplace contact, supervisor support and expectations of return to work, was mailed to 1112 randomly selected sick-listed people in Sweden and completed by 534, representing a response rate of 48%. *Results:* The most important factors affecting RTW expectations were work ability and burnout. Employees reporting high levels of work ability were more likely to expect to RTW compared to those reporting low levels, and this was dependent on their relative burnout score. Those with a high burnout score were less likely to expect to RTW, while for those with a low burnout score RTW expectations were dependent on age, country of birth, and supervisor support. For young employees reporting low work ability and low burnout score, RTW expectations were lower. *Conclusions:* Our results suggest a more nuanced approach to delivery of RTW services is required, whereby practitioners need to understand the socio-ecology of the range of factors that impact RTW expectations. The use of decision-tree analysis facilitates this understanding by describing the inter-relationships between these factors.

Key words: sick leave, return to work, facilitating factors.

Running head: Interrelated factors

BACKGROUND

Long-term sickness absence constitutes a problem in most western countries, and Sweden is no exception. The consequences of long-term sickness absence can be seen at different levels. At an individual level, it often means negative financial consequences, decreased well-being and less participation in everyday life (Waddell & Burton, 2006). At a company level, long term absence results in additional recruitment costs and administration, and loss of production

(Ekman et al, 2005); and at a societal level, it leads to increased costs for healthcare and social insurance systems (Young et al, 2005). In Sweden, there is an increasing number of employees on sickness absence due to psychiatric problems, and mental disorders is today the most frequent diagnose (40%) among the long-term sick population (Försäkringskassan, 2018). Most of these employees have worked related factors such as high job demands, low work ability and low social support (de Vries et al., 2018). Against this background, research that can facilitate return to work (RTW) in Sweden and other countries is important.

Return to work is a complex phenomenon in which many different factors are involved. In a comprehensive meta-analysis by Cancelliere et al (2016), based on 56 high quality systematic reviews with low risk of bias, a wide range of hindering and facilitating factors for RTW among employees on long term sickness absence were identified. Factors were found at different levels, from the worker through to the health care system, with a majority of factors with moderate or strong evidence being located at the level of the worker and the workplace, e.g. the workers age, level of education, level of pain, self-efficacy, recovery expectations, workplace contact, workplace support, physical job demands, and perceived job control. Fewer factors were related to the compensation and health care systems. Although the findings of these studies offer a relatively clear picture on individual factors at different levels that impact RTW, they do not provide much insight into the interrelationships between them.

The socio-ecological approach (Bronfenbrenner, 1979) provides us with a useful theoretical framework to understand the multiple factors impacting RTW at different levels and their interaction. This approach originates from Bronfenbrenner's studies on human development, in which he postulated that the entire ecological system in which growth occurs must be taken into account. Bronfenbrenner showed that health among individuals should be understood not only in terms of individual factors (e.g. biological and genetic), but also in terms of the social contexts in which individuals are embedded, and is a function of the quality of the inter-relationships among individual, family, and institutional systems. Since its inception, the model has been used as a theoretical basis to interpret and understand findings from a range of studies in contexts such as mental health (Reupert, 2017), physical activity (Marjo et al, 2014), health behavior (Story et al, 2008), and obesity (Kumaniyka, 2002). Applying the model in the RTW context, the socio-ecological approach considers the interaction of individual factors of people on long-term sickness absence (eg, working ability and capability) and their contextual factors (eg, support systems, including support from

supervisors, colleagues) (Ungar, Ghazinour & Richter, 2013); and the interaction of these factors within their environment, including their relationships, cultural identity, and the human resources support available to them (Wang, et al., 2014).

Our study is an exploratory study with two aims. The first is to identify factors that impact RTW expectations in a national sample of Swedish workers on long term sickness absence. The second is to gain an understanding of the interrelationships of these factors by mapping them with socio-ecological framework. What is unique about our study is the use of decision tree analysis through which the hierarchical order of factors and their relationships can be examined (Phillips et al, 2004), thereby facilitating a socio-ecological understanding of RTW.

MATERIALS AND METHOD

Study setting

The Swedish sickness insurance system is tax-based and covers the whole working population (16-65 years of age). After a period of seven days of self-certification, work disability must be confirmed by a physician in a sickness certificate which is sent to the Social Insurance Office. A decision concerning entitlement to sickness benefit is made, based on an assessment of work ability. The employer has to pay the employee's wages for the first 14 days of sick leave, except for a first qualifying day. Sickness benefit is income-related and covers 80% of the individual's income. Different levels of sickness benefit can be granted: 25%, 50% or 100%.

Participants and procedure

The survey was mailed to 1112 randomly selected sick-listed people in Sweden, identified by the Social Insurance Agency. In order to be included, the sick-listed individual had to be on full sickness absence, on sick leave between 60 and 90 days and permanently employed. Following the first distribution of the survey, 390 individuals responded, representing a response rate of 35%. Following two reminders, the response rate increased to 45% (n=502). In order to further increase the response rate, a shortened version of the survey was distributed, which resulted in a total of 534 answered surveys, representing a response rate of 48%. The differences between the original survey and the shorter version were minor, with questions regarding perceived support from industrial health units and union representatives

excluded in the shorter version. There were no significant differences regarding age and gender between responders and non-responders. The distribution of conditions reported by respondents was representative of the total sick leave population (National Social Insurance Office, 2011).

Study measures

The independent variables in this study involved a combination of individual and contextual factors related to RTW derived from previous studies and included demographic information (e.g. age, gender, ethnicity), perceived health and work ability, workplace contact, workplace support and expectations for RTW. These variables were chosen based on previous studies (Cancelliere, 2016; Selander, 2015) which show that they are all associated with RTW.

Demographic information

In addition to gender, and age, the questionnaire included items on country of birth, education and occupation. Country of birth was categorized as in Sweden and not in Sweden to reflect cultural identity. Education was classified into primary education, secondary education, university degree, and “other”. Occupations were classified into four categories: managers, occupations requiring an extensive education, occupations requiring a short education, and occupations requiring no education.

Health and work ability

The survey included questions on nature of injury/illness, self-rated health, stress/burnout, and work ability. Nature of injury/illness were classified into three categories: musculoskeletal problems, mental disorders, and other health problems (including cardiovascular diseases, physical trauma, cancer, pregnancy, and other problems). Musculoskeletal problems and mental disorders were chosen because they constitute the two largest injury/illness categories for people on long-term sickness absence. Health status was determined using the EQ visual analogue scale (EQ-VAS) (The EuroQol group, 1990), which measures overall self-rated

mental and physical health on a scale ranging from the worst state imaginable (0) to the best state imaginable (100).

Copenhagen burnout inventory

Stress/burnout was measured by using a subset of questions from the Copenhagen burnout inventory (Kristensen et al, 2005). These included: How often are you tired? How often are you physically exhausted? How often are you mentally exhausted? How often do you think 'I am just too tired'? How often do you feel worn out? and How often do you feel weak and susceptible to illness? The reliability of this inventory was found to be high with a Cronbach's alpha of 0.84.

Work ability

Work ability was measured using a subset of questions from the Work Ability Index (WAI) (Tuomi et al, 1998), which is an instrument originally containing seven items using a 5-point Likert response scale from very good (1) to very bad (5). Items included in our study included: How would you rate your current working ability? How is your current working capacity in relation to your physical work demands? How is your current working capacity in relation to your psychological work demands?

Workplace contact

The survey included questions regarding the employees contact with supervisor, colleagues and the human resource department. Questions included: During your time on sickness absence, have you had any contact with your supervisor? During your time on sickness absence, have you had any contact with your colleagues? During your time on sickness absence, have you had any contact with the HR-department? These questions were formulated by the authors and were answered as yes or no. Previous studies (Selander et al, 2015; Rinaldo & Selander, 2015) have shown that contact with the workplace, especially with supervisors and colleagues, is important to a successful RTW.

Supervisor support

In order to create a variable reflecting supervisor support, five separate questions from the survey were averaged into an index based on factor analysis with a high level of reliability of Cronbach's alpha of 0.92. The five questions were: Did you, during your absence, experience contact with your supervisor as supportive? Did you, during your absence, experience the contact with your supervisor as helpful? Did you, during your absence, experience contact with your supervisor as skillful? Did you, during your absence, experience contact with supervisor as engaging? Have you during your absence, felt valued by your supervisor? All questions had a response scale ranging from 1 (not at all) to 5 (yes, very much).

Return to work (RTW)

Given employees were on long term sick leave, actual RTW could not be investigated. In the current study a RTW-variable was created based on employee expectations regarding RTW. Two separate questions from the survey were averaged into an index, which had an acceptable level of reliability of Cronbach's alpha of 0.64. The two questions were: What are your chances of being able to work in six months' time? (response scale ranging from 1 [considerable chance] to 6 [very small chance]); and: Given your health status, do you think you will be in your current job in two years' time? (response scale ranging from 1 [hardly] to 3 [most likely]). The answers on the first question were reversed, and the created RTW-variable transformed into a categorical variable by using a cut-off score of 6. Employees reporting a total sum of 2-5 were categorized as "less likely to RTW", and employees reporting a total sum of 6-9 were categorized as "more likely to RTW".

Statistical methods

Decision tree analysis, using a partition approach within a statistical predictive model, was employed to investigate interrelationships between the different variables and to identify those factors which were most important in influencing RTW. Decision tree analysis is useful for examining relationships without having a clear prior model, where the focus is at an exploratory level. The partition platform recursively partitions data according to a relationship between the independent variables and RTW, creating a decision tree. The partition algorithm chooses optimum splits from a large number of possible splits, making it a powerful modeling, and data discovery tool.

There are a number of advantages of using decision tree analysis over logistic regression. First, it enables the identification of predictors of return to work that have precise probabilities

and offers a high level of sensitivity and specificities, thus providing more clarity about RTW pathways. Second, it is a useful method for predicting the importance and interrelationships of numerous independent variables and can analyze both continuous and categorical outcome variables (Phillips et al, 2004). Third, the prediction model can be presented by using a decision tree diagram, which visually represents the interrelationships among key variables.

Decision analysis is a robust method and can be used with data that includes missing values, maybe non-homogenous, or is not normally distributed. The analysis was conducted with an alpha of 0.05. To facilitate the use of the decision tree method, participants were grouped into the categories using the Entropy method (Phillips et al, 2004) in order to maximize the purity of the groups and thereby develop a clear classification of factors relating to RTW.

Theoretical framework

The socio-ecological model developed for the present study is a modified version of Bronfenbrenner's original five level model and consists of three levels: 1) *Employee demographic factors*, i.e. constitutional and biologically determined factors that have been found to be associated to RTW. In the current study this included gender, age, and ethnicity; 2) *Employee intrapersonal factors*, i.e. individual characteristics that reside within the person and can influence behavior. This included education, occupation, diagnosis, work ability, self-rated health, and burnout; and 3) *Employee interpersonal factors*, i.e. an individual's relationships and social environment that affect behavior by providing norms, social support, and behavior modelling. This included contact with colleagues, contact with supervisor, contact with HR-department, and supervisor support. The reason for including these three levels in the model was that a majority of enablers and barriers with moderate or strong evidence are found at these three levels (Cancelliere et al, 2016).

Research ethics

Ethics approval was obtained from the Regional Board of Ethics at Linköping University (2010/375-31). Participants in the study gave their informed consent when responding to the survey. The informed consent letter, which was sent to participants prior to responding to the survey, contained information about the purpose of the survey, research question, confidentiality of their response, how to complete the survey, and a statement that their response was entirely optional. It also emphasized that participants had the right to withdraw their consent at any time without explanation

RESULTS

The study sample (n=534) consisted of 59% women and 41% men with an average age of 50 for women and 52 for men. A majority of the employees (71%) were married or lived together and 86% were born in Sweden. Out of the total sample, 34% had musculoskeletal problems, 20% had mental disorders, and 46% had other problems (e.g. trauma 14%, cancer 11%, cardiovascular 8%). Musculoskeletal problems were more common among men (39%) than among women (30%), and mental problems were more common among women (26%) than among men (11%). More men (52%) than women (46%) reported that their sickness/illness was related to work. In Table 1, a number of potential demographic characteristics are presented.

Table 1

In Table 2, employees more likely to RTW were compared to employees less likely to RTW on the variables of work ability, self-rated health, supervisor support, and stress/burnout. As can be seen, all differences were statistically significant. Employees that were more likely to RTW reported higher levels of work ability, health status, and supervisor support, and lower burnout scores than the employees with lower chances of RTW.

Table 2

In the final predictive model (Figure 1), where the variables in table 1 and 2 all were considered, it is evident that the most important factors for RTW were perceived work ability and burn out score and these were dependent on age, country of birth, and supervisor support. Specifically, employees with a high level of perceived work ability (score higher than 7) were more likely to RTW than those with low work ability (score 7 or less), that this was dependent on their burnout score and was mediated by age. Age was not a predictive factor of returning to work, instead it is a confounding factor in the model. In the young age group (Group 1: 18-29 years) employees were not likely to return to work when their work ability was low. In age group 2 (30-39 years) employees were likely to return to work when their work ability

score was more than 2, had supervisory contact and excellent health status. For age group 3 (40-49 years) employees were more likely to return to work when they were born in Sweden. In age group 4 (50-59 years) employees were more likely to return to work when they had good supervisor support. Finally, in age group 5 (60 and above years) employees were likely to return to work if they had lower levels of burnout (less than score of 29.17). Further, for those in this age group with burnout levels of more than 29.17, they were still likely to return to work if they had good collegial contact and excellent health status.

Figure 1

The total model fit was high, with a sensitivity score of .90, specificity score of 0.89, a precision level of prediction of 0.89, total accurate classification rate 82.9% and AUCROC area of 74%. The results suggest the decision tree analysis provided a high level of accurate prediction.

DISCUSSION

The aims of our study were to identify factors that impact RTW expectations in a national sample of Swedish workers on long term sickness absence as well as to gain an understanding of the interrelationships of these factors by mapping them within a socio-ecological framework. Our results identified several variables that impacted RTW expectations and also described how these factors were interrelated within and across different socio-ecological levels. A decision tree was constructed that shows the most important attributes relating to RTW. These included age, country of birth, supervisor support, co-worker contacts, burnout, work ability, and nature of injury. The decision tree identified which of these attributes has the highest predictive value. It was found that work ability and burnout are associated each other when work ability is low. A decreasing level of work ability is associated with an increasing level of burnout, which is consistent with previous studies (Arandelovic et al., 2010, Hatch et al., 2018), and that burnout is associated with low work ability and this

relationship is age dependent. Nature of injury was not important to RTW, and therefore was automatically deleted to enable a higher level of precision.

The analysis provided novel findings of the complex relationship between demographic factors, work ability, burnout and RTW expectations. It revealed that the relationship between RTW expectations and work ability and burnout is moderated by other contextual and cultural factors such as place of birth and supervisor support. Our findings have extended those of previous studies in that we found both work ability and burnout predict RTW, dependent on country of birth and supervisor support.

The analysis identified RTW factors at all three socio-ecological levels, i.e. employee demographic (age, country of birth), employee intrapersonal (work ability, burnout score, self-reported health) and employee interpersonal factors (supervisor support, contact with colleagues). Viewed as separate variables, the finding that work ability and burnout are important factors relative RTW is in line with results from previous research. Work ability was measured using questions from an established index, the Work Ability Index (WAI) (Tuomi et al, 1998), and a substantial number of previous studies have shown that work ability is strongly related to RTW (Canselliere et al, 2016; De Vries et al, 2018; Detaillies et al, 2009). Stress and burnout were measured using the Copenhagen burnout inventory, and also here, previous research is clear that stress and burnout decrease the likelihood of RTW (Duijts et al, 2007; Iles et al, 2008; Peters et al, 2016).

The decision tree analysis facilitated our understanding of the socio-ecological model of RTW, particularly the interrelations between factors, both within and across individual and contextual levels. In cases where perceived work ability is low, and stress/burn out is high, RTW is low. Where low work ability is related to low stress/burn out, RTW is dependent on other contextual factors. For employees aged between 18 and 39, RTW expectations are higher when contact with colleagues and health are perceived as good. For employees aged 40-49, expectations of RTW are higher when employees' cultural identity was 'Swedish'. For employees aged 50-59 good supervisor support is related to higher expectations of RTW, while these expectations, when supervisor support is low, is dependent on contact with colleagues and perceptions of burn out. RTW is also affected by interrelated factors at different socio-ecological levels. For employees older than 60, expectations of RTW are dependent on health, place of birth, contact with colleagues and level of stress/burn out.

The findings regarding work ability, and stress/burnout are encouraging, since both perceived work ability and perceived stress are potentially modifiable. Well known hindering factors for RTW, such as older age, prior sickness absence, and low socioeconomic status are difficult or impossible to modify, while perceived work ability can be improved and stress reduced. For example, the individual's workplace and job tasks can be modified and better adjusted to the employees' abilities. Recent studies (Buys et al, 2017) underline the importance of workplace adjustments as a facilitating factor for RTW. Furthermore, from a psychological perspective, individuals' beliefs and perceptions of self-capability is to a great extent dependent on self-efficacy and locus of control, which may be altered through counselling interventions. For example, using motivational interviewing, with its client centered counselling perspective for eliciting behavior change by helping clients to explore and resolve ambivalence, can improve perceptions of self-capacity (Hettema et al, 2005).

Regarding age, our results were somewhat surprising. A significant amount of previous research has shown a strong negative association between age and return to work, i.e. chances for RTW decrease with increasing age. Our study showed the opposite, that young employees (aged 18-29) were less likely than older employees to RTW. One should bear in mind, however, that this finding is relevant only among employees reporting low work ability (see left branch in Figure 1). Young employees with high work ability are likely to RTW, and the average score on work ability for ages 18-29 in the current study was 12.5. However, since the youngest age category (18-29) included only few observations (n=28) this finding should be interpreted with caution. For the age category 50-59 years among the employees reporting low work ability (which included 34% [n=181] of the total sample), supervisor support was important. With good supervisor support, chances for RTW were higher. This finding is in line with previous research (Cancellier, 2016). For example, in a recent study by Selander et al (2015) it was concluded that supervisor support facilitates RTW and that supervisors should be aware that they play a significant role in the RTW process. The findings that place of birth, self-perceived health, and contact with colleagues are associated with RTW is also consistent with other studies (Cancelliere, 2016). A further somewhat surprising finding was that nature of injury was not significant in the final model, since previous studies showed that employees with mental disorders less often RTW (Cancelliere et al, 2016). One must also bear in mind that the data displays *expectations* regard RTW, and not necessarily *actual* RTW.

When viewed from a socio-ecological perspective, it can be concluded that a range of factors at the individual, interpersonal and contextual levels, contribute to RTW expectations. These findings are interesting and contribute to a greater understanding of the RTW process in general. Previous studies often identify age and other demographic factors as the strongest predictors of RTW (Cancelliere, 2016), while the current study focuses more on perceived work ability and stress/burnout. The relevance of factors at the intrapersonal level is clearly important, more than ever, when designing RTW programs and interventions. Furthermore, given the complex picture of factors that impact RTW, including interrelated factors at different levels within a hierarchical order, it is clear that simple analytical methods will only provide a partial understanding of RTW. To gain a better understanding of this phenomenon more sophisticated methods are needed. Decision tree analysis, within a socio-ecological theoretical framework, as employed in the current study is a good example of such an approach.

Study strengths and limitations

The main strength of this paper is that the decision tree analysis within the socio-ecological framework enables us to map the ecology of RTW factors in the Swedish context. Another strength of the study is the rigorous data collection process. A first survey was followed by a reminder, and after that a second reminder (including a new survey), and then a third (including a shorter and somewhat modified version of the survey). However, the differences between the original survey and the shorter version were minor, with questions regarding perceived support from industrial health unit and union representative excluded in the shorter version. Since the unit of analysis focused on support from the workplace, the excluded questions did not affect the results.

The study has several limitations. First, the results are based on a response rate of 48%. As in any study, a significant number of non-respondents may have led to biased results. A decline in response rates in general is a recognized problem (Owen-Smith et al, 2008), and given that the current study comprises a relatively “complex” sample, and covers questions on health status and sickness absence, it is not surprising that a number of employees approached declined to participate.

The use of 'expectations of return to work' for RTW may be questioned as an outcome measure. Expected RTW is not necessarily the same as actual RTW, and the optimal approach would be to investigate whether or not the employees actually do return to work. With the chosen cross-sectional design, with a survey directed to employees on long term sick leave, this was not possible. However, a number of previous studies (Holmgren, 2004; Shaw & Huang, 2005; Niewenhuijsen et al, 2006; Hou et al, 2012; Lötters & Burdorf, 2006; Plana et al, 2012) show that the ill or injured worker's own perception of RTW has a strong predictive value regarding actual RTW. Further research is required that examines whether the RTW factors we identified and their interrelationships maintain their importance if the outcome variable is actual RTW.

Although decision tree analysis provides a powerful and efficient solution to a very difficult problem, it does have disadvantages. When sample size is small, the analysis tends to terminate its partition search on a given variable too early, and that the decision tree induction process can result in the metrics producing misleading results. Decision tree analysis is often used in cross-sectional studies to find predictive factors for health outcomes (Cannon, et al., 2018) - a longitudinal study is required to confirm the predictive results and RTW as the outcome variable. Nevertheless, our sample size was sufficient to for the decision tree analysis to produce a sufficient partition search for accurate predictors relating to RTW.

With a cross-sectional design, there is always uncertainty regarding causality. For example, the finding that supervisor support is associated with high levels of RTW expectations can be interpreted in such a way that such support increases the chances of RTW. However, a positive and optimistic employee may also be more eager to have high-quality contact with his or her supervisor. It is also likely that employees with better interactions prior to being off work would have better interactions when they are actually off work. In other words, people with worse pre-absence working relationships will have lower chances of RTW. A prospective study is needed to address the issue of causality. Without such a study, the results must be interpreted with caution.

The socio-ecological model used in the present study has three levels; the demographic, the intrapersonal, and the interpersonal. We know from previous studies (Cancelliere, 2016) that most factors associated with RTW are found at these levels, but also that relevant factors are found at other socio-ecological levels, e.g. factors related to the compensation system and

health care domains. Since the survey that the present study is based on did not include questions at these levels, no further analyses could be done. If data at these levels had been available, our study would have resulted in an even broader picture of factors associated with RTW. Further research is required in relation to deepening our understanding of the role of a range of additional variables and their interrelationships in the RTW process.

CONCLUSION & IMPLICATIONS

The study analyzes factors at different levels (demographic-, intrapersonal-, and interpersonal level) which may predict RTW for individuals on long-term sickness leave. The main conclusion from the study is that self-rated work ability and health (burn out) are important 'predictors' of expectations to RTW, dependent on age, country of birth, and supervisor support. Overall, our results demonstrate that RTW is a complex phenomenon affected by a number of separate and interrelated factors found at different socio-ecological levels. For RTW interventions to be successful, this complexity must be understood and accounted for by actors involved.

ACKNOWLEDGEMENT

The authors would like to acknowledge Professor Kerstin Ekberg for her expertise and guidance in data analysis. This research received no specific grant from any funding agency, commercial, or non-for-profit sectors.

DECLARATION OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

Arandelović M, Nikolić M, Stamenković S. Relationship between burnout, quality of life, and work ability index--directions in prevention. *ScientificWorldJournal*. 2010;10:766-777. doi:10.1100/tsw.2010.83

Bronfenbrenner U. The ecology of Human Development. Cambridge, MA: Harward University Press; 1979.

Buys N, Selander J, Sun J. Employee experience of workplace supervisor contact and support during long-term sickness absence. *Disabil and Rehabil.* 2017;7:1-7.

Cancelliere C, Donovan J, Jenssen-Stochkendahl M. et al. Factors affecting return to work after injury or illness: best evidence synthesis of systematic reviews. *Chiropr Man Therap.* 2016;24(1):32.

Cannon D, Sriram K B, Liew A W, and Sun J. Resilience Factors Important in Health-Related Quality of Life of Subjects With COPD. *Respiratory Care* October 2018; 63 (10):1281-1292; DOI: <https://doi.org/10.4187/respcare.05935>

Detailles SI, Heerkens YF, Engels JA et al. Common prognostic factors of work disability among employees with a chronic somatic disease: a systematic review of cohort studies. *Scand J of Work, Environ and Health* 2009;35(4):261-81.

de Vries M, Fishta A, Weikert B, et al. Determinants of Sickness absence and return to work among employees with common Mental Disorders: A scoping review. *J Occup Rehabil.* 2018;28(3):393-417.

Duijts SF, Kant I, Swaen GM, et al. A meta-analysis of observational studies identifies predictors of sickness absence. *J of Clin Epidem.* 2007;60(11):1105-15.

Ekman M, Jonhagen S, Hunsche E, Jonsson L. Burden of illness of chronic low back pain in Sweden: a cross sectional, retrospective study in primary care setting. *Spine* 2005;15:1777-85.

Försäkringskassan [The Swedish Social Insurance Agency]. Sjukpenning-
Sjukfrånvaro per bransch och sektor.
<https://www.forsakringskassan.se/statistik/sjuk/sjuk-och-rehabiliteringspenning>.
Accessed 10 Feb 2018.

Hatch DJ, Freude G, Martus P, Rose U, Müller G, Potter GG. Age, burnout and
physical and psychological work ability among nurses. *Occup Med (Lond)*.
2018;68(4):246-254. doi:10.1093/occmed/kqy033

Hettema J, Steele J, Miller WR. Motivational Interviewing. *Annu Rev Clin Psychol*.
2005;1:91-111

Holmgren K, Dahlin Ivanoff S. Women on sickness absence--views of possibilities and
obstacles for returning to work. A focus group study. *Disabil and Rehabil*.
2004;26(4):213-22.

Hou WH, Sheu CF, Liang HW, et al. Trajectories and predictors of return to work after
limb injury – a 2 year follow up study. *Scand J of Environ Health* 2012;38(5): 456-66.

Iles RA, Davidson M, Taylor NF. Psychosocial predictors of failure to return to work in
non-chronic specific low back pain: a systematic review. *Occup and Environ Med*.
2008;65(8):507-17.

Kristensen T , Borritz M , Villadsen E & Christensen CB The Copenhagen Burnout
Inventory: A new tool for the assessment of burnout, *Work and Stress* 2005;19(3) 192-
207.

Kumari S, Jeffery RW, Morabia A et al. Public health approaches to the Prevention of
Obesity (PHAPO) Working group of the International Obesity Task Force (IOTF).
Obesity Prevention: the case for action. *Int J Oes Relat Metab Disord*. 2002;93: 1168-73.

- Lötters F, Burdorf A. Prognostic factors for duration of sickness absence due to musculoskeletal disorders. *Clin J of Pain* 2006;22(2):212-21.
- Marjo A, Mehtälä K, Sääkslathi AK et al. A socio-ecological approach to physical activity interventions in childcare: a systematic review. *Int J Behav Nutr Phys Act* 2014;11: 22.
- National Social Insurance Office, Social Insurance Report 2011:17 (In Swedish. Försäkringskassan. Socialförsäkringsrapport 2011:17)
- Nieuwenhuijsen K, Verbeek JH, de Boer AG, et al. Predicting the duration of sickness absence for patients with common mental disorders in occupational care. *Scand J of Work, Environ and Health* 2006;32(1):67-74.
- Owen-Smith V, Burgess-Allen J, Lavelle K and Wilding E. Can lifestyle surveys survive a low response rate? *Publ Health* 2008;122(12):1382-83.
- Peters S, Johnston V, Hines S, et al. Prognostic factors for return to work following surgery for carpal tunnel syndrome: a systematic reviews. *JB I database of systematic reviews and implementation reports* 2016;14(9):135-216.
- Phillips SJ, Dudik M, Schapire RE. A Maximum Entropy Approach to Species Distribution Modeling. *Proceedings of the Twenty-First International Conference on Machine Learning*, 2004; 655-662.
- Plana M, Lopez JC, Martinez JM et al. Return to work expectations of workers on long-term non-work-related sick-leave. *J of Occup Rehabil.* 2012; 22(1):15-26.
- Reupert A. A socio-ecological framework for mental health and well-being, *Adv in Ment Health* 2017;15(2): 105-107.
- Rinaldo U, Selander J. Return to work after vocational rehabilitation for sicklisted workers with longterm back, neck and shoulder problems: A follow-up study of factors involved. *Work* 2015; 55:115-31.

Selander J, Tjulin A, Mussner U, Ekberg K. Contact with the Workplace During Long-term Sickness absence and Worker expectations of Return to Work. *Int J of Disabil Manage*. 2015;10: 1-13.

Shaw WS, Huang YH. Concerns and expectations about returning to work with low back pain: Identifying themes from focus groups and semi-structured interviews. *Disabil and Rehabil*. 2005; 27(21):1269-81.

Story M, Kaphingst KM, Robinson-O'Brien R et. al. Creating healthy food and eating environments: policy and environmental approaches. *Annu Rev Public Health* 2008;29: 253-72.

The EuroQol group. EuroQol – a new facility for the measurement of health related quality of life. *Health Policy* 1990;16:199-208.

Tuomi K, Ilmarinen J, Jahkola A, et al. Work Ability Index (2nd revised edition).. Finnish Institute of Occupational Health, Helsinki, Finland: Occupational Health Care, 1998.

Ungar M, Ghazinour M, Richter J. Annual research review: What is resilience within the social ecology of human development? *J Child Psychol Psychiatry* 2013;54(4):348-366.

Waddell G, Burton AK. *Is work good for your health and well-being?* London: TSO; 2006.

Wang P, Liu DZ, Zhao X. The social ecology of resilience: A comparison of Chinese and Western researches. *Procedia Soc Behav Sci* 2014;116:3259-3265.

Young AE, Roessler RT, Wasiak R, et al. A developmental conceptualization of return to work. *J Occup Rehabil*. 2005;4:557-68.