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Research paper

Job demands, control and social support as predictors of trajectories of depressive symptoms

Julia K. Åhlin[a,*], Kristiina Rajaleid[a,b], Markus Jansson-Fröjmark[c], Hugo Westerlund[a], Linda L. Magnusson Hanson[a]

[a] Stress Research Institute, Stockholm University, Stockholm, Sweden
[b] Centre for Health Equity Studies, Stockholm University, Karolinska Institute, Stockholm, Sweden
[c] Centre for Psychiatry Research, Department of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden

ABSTRACT

Background: Job demands, job control and social support have been associated with depressive symptoms. However, it is unknown how these work characteristics are associated with different trajectories of depressive symptoms, which this study aimed to examine.

Methods: We included 6679 subjects in the Swedish Longitudinal Occupational Survey of Health (SLOSH), who completed biennial questionnaires in 2006–2016. Group-based trajectory models identified groups with similar development of depressive symptoms. Multinomial logistic regression estimated associations between baseline demands, control, social support and trajectories of depressive symptoms.

Results: We identified six depression trajectories with varying severity and stability across four measurements. High job demands and low social support, but not low control, were associated with higher probability of belonging to subsequent trajectories with higher symptom level compared to very low symptom level. Adjusted risk ratios ranged from 1.26, 95% CI = 1.06–1.51 (low symptom trajectory) to 2.51, 95% CI = 1.43–4.41 (persistent severe symptom trajectory). Results also indicated that onset of high demands, low control and low social support increases depressive symptoms over time.

Limitations: The results were based on self-reported data and all individuals did not have complete data in all waves.

Conclusions: The results indicated that especially perceptions of high job demands and low social support are associated with higher or increasing levels of depressive symptoms over time. This support the supposition that high job demands, and low social support may have long-term consequences for depressive symptoms and that interventions targeting job demands and social support may contribute to a more favourable course of depression.

1. Introduction

Depression is a common mental disorder and leading cause of the global disease burden (Ferrari et al., 2013). The one-year prevalence of major depression was estimated to be 6.9% in Europe in 2010 (Wittchen et al., 2011). More severe forms of depression have been associated with more treatment usage and costs, disability, unemployment and poorer work performance than less severe depression (Birnbaum et al., 2010). Persons with subthreshold depression, referring to clinically relevant depressive symptoms which do not meet the criteria for major depression, have a higher risk of developing major depression later (Cuijpers and Smit, 2004).

Depression is episodic by nature, and timing of onset and remission of depression tends to vary a lot, hence different individuals often have different trajectories, i.e. developmental courses of symptoms over time (Colman and Ataullahjan, 2010). These trajectories may be heterogeneous, with different patterns of severity and stability. Trajectories with high symptom burden have been associated with poor psychiatric, social and economic outcomes (Musliner et al., 2016). Different trajectories may also have different causes, and identification of risk

Abbreviations: SLOSH, Swedish Longitudinal Occupational Survey of Health; JDC Model, Job Demand-Control Model; JDCS Model, Job-Demand-Control-Support Model; SWES, Swedish Work Environment Survey; SCL-CD, Symptom Checklist-Core Depression scale; ICD, International Classification of Diseases; DCSQ, Demand-Control-Support Questionnaire; GBTM, Group-based trajectory modelling; BIC, Bayesian Information Criterion; APPA, average posterior probabilities of assignment

* Corresponding author.
E-mail address: julia.ahlin@su.se (J.K. Åhlin).

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factors for different trajectories can further our understanding of the aetiology of depression and enable better prevention of highly burdening problems (Colman and Ataullahjan, 2010).

Some review studies have found that predictors of trajectories with larger symptom burden included female gender, lower income/education, and non-white race (Musliner et al., 2016), and may include stressful events, comorbid or co-occurring mental disorders and low socio-economic status (Colman and Ataullahjan, 2010). Psychosocial stressors at work have been studied extensively in relation to mental health (Rugulies, 2012). Numerous studies investigating the association between work stress and depression have used the Job Demand-Control (JDC) Model (Karasek, 1979), according to which psychological job demands refer to the pace and mental intensity of work, whereas job control (decision latitude) comprises decision authority and skill discretion. According to this model, four types of situations can be distinguished: "high strain", "low strain", "active" and "passive" (Karasek, 1979). The Job-Demand-Control-Support (JDCS) Model extends the JDC Model by integrating social support as a fundamental characteristic of the work environment (Johnson and Hall, 1988; Johnson et al., 1989). Both high demands, low control, and the combination (high strain) have been found to be risk factors for depressive symptoms (Bonde, 2008; Netterstrom et al., 2008; Nieuwenhuijsen et al., 2010; Stansfeld and Candy, 2006; Theorell et al., 2015). Furthermore, poor social support at work, along with work stressors like bullying, effort reward imbalance, unfavourable social climate, conflicts, job insecurity, long working hours and lack of organizational justice has been shown to predict common mental disorders (Stansfeld and Candy, 2006) including depression (Netterstrom et al., 2008; Theorell et al., 2015). Some studies have also suggested that accumulated or increased exposure to psychosocial work stressors is associated with depression, however, results are still inconsistent and few studies have included more than two measurement points (Burns et al., 2016; Stansfeld et al., 2012). How duration and intensity of, as well as change in, psychosocial working conditions relate to depression is not yet clear (Netterstrom et al., 2008; Nieuwenhuijsen et al., 2010). Little is also known about long-term effects. No previous study to our knowledge has investigated how psychosocial working conditions influence depressive symptom trajectories.

1.1. Aim

In this study, the aim was to investigate the relationship between psychosocial working conditions in terms of job demands, job control and social support at work and trajectories of depressive symptoms.

2. Methods

2.1. Study population

We used data from the Swedish Longitudinal Occupational Survey of Health (SLOSH), a longitudinal cohort study of labour market attachment, work environment, social situation, health and wellbeing (Magnusson Hanson et al., 2018). SLOSH is a follow-up of participants from the Swedish Work Environment Surveys (SWES) (cross-sectional surveys 2003–2011 $n = 40877$), originally representative of the Swedish working population aged 16–64. A number of participants have been followed up through questionnaires every other year since the first wave in 2006 ($n = 9214$), while some SWES participants have been followed up since 2008 ($n = 9703$), 2010 ($n = 2572$) or 2014 ($n = 19{,}388$). At each follow-up, respondents chose between two versions of a self-completion questionnaire: 1) 'in paid work' (i.e., gainful employment for at least 30% of full-time), or 2) 'not in paid work' (i.e., not in gainful employment or working less than 30% of full-time). All in all, 28,672 individuals (70%) had responded to at least one follow-up questionnaire in 2016, while 6387 had responded five or six times. More detailed information about the SLOSH study, and characteristics of respondents versus non-respondents, can be found elsewhere (Magnusson Hanson et al., 2018). Data from all six waves 2006, 2008, 2010, 2012, 2014 and 2016, with overall response rates between 65% and 51%, were used in this study. Since a larger number of participants were invited in the second wave and followed up repeatedly henceforth, we chose wave two as the baseline. However, in case a subject did not participate in the second wave (or had missing data on relevant variables) but participated in the first and later waves, the first wave was considered baseline, which was the case for $<10\%$ of our sample. This meant that for around 9% of the sample there was a time lag of four years instead of two years between the exposure (to job demand, control and social support) and the trajectories of depressive symptoms (measured in waves three-six) in the main analyses.

The current study was thus based on 6679 SLOSH participants who: 1) responded to the questionnaire for those 'in paid work' at baseline, 2) responded to the depression items in at least one wave between the third and sixth wave inclusive (to model their depression trajectories during this time period), and 3) were 54 years or younger in 2006, excluding participants aged 65 years or older in wave six, who were thus likely to have retired. The reason for excluding older participants was that retirement is considered a major transition in life which could affect depressive symptoms (van der Heide et al., 2013). Among these 6679 individuals, 6080 (91%) had complete data on all variables of interest, except depressive symptoms in all waves three through six. The study was approved by the Regional Ethical Review Board in Stockholm (2006/158–31, 2008/240–32, 2010/0145–32, 2012/373–31/5, 2013/2173–32, 2015/2187–32). All participants gave informed consent.

2.2. Outcome variable

Symptoms of depression were measured with the Symptom Checklist Core Depression scale ($SCL\text{-}CD_6$), a brief 6-item subscale of the (Hopkins) Symptom Checklist (SCL) depression scale (Magnusson Hanson et al., 2009, 2014). Respondents were asked to indicate to what extent they, during the last week, had been troubled by *feeling lethargy or low in energy, feeling blue, blaming oneself for things, worrying too much about things, feeling no interest in things,* and *feeling everything is an effort* (mean $\alpha = 0.91$). Items were scored on a Likert scale ranging from (0) "not at all" to (4) "extremely" . We used a sum scale which can serve as an indicator of depression severity, ranging from 0 to 24 (Magnusson Hanson et al., 2014). A score < 7 has been suggested to indicate no depression, 7–9 doubtful depression, 10–11 mild depression, 12–15 moderate depression and 16–24 severe depression, in line with the International Classification of Diseases (ICD-10) diagnostic system (Bech, 2011).

2.3. Exposure variables

Job demands, job control and social support were measured using the Demand-Control-Support-Questionnaire (DCSQ) (Fransson et al., 2012; Sanne et al., 2005). Job demands were measured by four items (*work fast, too much effort, conflicting demands, enough time;* mean $\alpha = 0.66$). Job control was measured by five items (*deciding how you do your work, deciding what you do at work, learn new things, high level of skill or expertise, require ingenuity*; mean $\alpha = 0.68$ (Chungkham et al., 2013). The items were scored on a Likert scale ranging from (1) "never/almost never" to (4) "often" . Workplace social support included five items (*calm pleasant atmosphere, spirit of unity, colleagues are there for me, can have a bad day, get on with supervisors;* mean $\alpha = 0.82$). Items were scored on a Likert scale ranging from (1) "strongly agree" to (4) "strongly disagree" . Median split was used to classify high and low demands and control as well as high and low social support, in line with the most common operationalization of the JDC Model (Courvoisier and Perneger, 2010). We also created a four-category variable considering the four different job situations according to the JDC Model