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Aging & Mental Health

ISSN: 1360-7863 (Print) 1364-6915 (Online) Journal homepage: http://www.tandfonline.com/loi/camh20

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To cite this article: Martin Hyde, Linda Magnusson Hanson, Holendro Singh Chungkham, Constanze Leineweber & Hugo Westerlund (2015) The impact of involuntary exit from employment in later life on the risk of major depression and being prescribed anti-depressant medication, Aging & Mental Health, 19:5, 381-389, DOI: 10.1080/13607863.2014.927821

To link to this article: http://dx.doi.org/10.1080/13607863.2014.927821

Published online: 19 Jun 2014.

Aging & Mental Health, 2015
Vol. 19, No. 5, 381–389, http://dx.doi.org/10.1080/13607863.2014.927821

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The impact of involuntary exit from employment in later life on the risk of major depression and being prescribed anti-depressant medication

Martin Hyde*, Linda Magnusson Hanson, Holendro Singh Chungkham, Constanze Leineweber and Hugo Westerlund

Stress Research Institute, Stockholm University, Stockholm, Sweden

(*Received 6 December 2013; accepted 20 May 2014*)

Objectives: Involuntary employment exit in later life has been shown to be a risk factor for poor physical and mental health. This study aims to examine the relationship between involuntary employment exit in later life and subsequent risk of reporting major depression or being prescribed anti-depressant medication (ADM).
Method: Data were drawn from four waves of the Swedish Longitudinal Occupational Survey of Health (SLOSH). This is a nationally representative longitudinal cohort survey of persons employed in Sweden in 2003 and 2005. The sample was restricted to respondents who had exited the labour market aged 50+ years between 2006 and 2012 ($N = 1433$). Major depression was measured using the Symptom Checklist Core Depression Scale (SCL-CD_6). Prescription ADM redeemed from a pharmacy was based on the National Prescribed Drug Register.
Results: After controlling for socio-demographic variables, health, health behaviours, and baseline depression, involuntary employment exit was associated with an increased risk of reporting major depression (OR 3.16; CI 1.32–7.61) and becoming newly prescribed ADM (HR 2.08; CI 1.03–4.21) compared to voluntary employment exit.
Conclusion: Involuntary employment exit represents a risk for subsequent depression in later life. Mental health and social services ought to consider identifying these individuals for possible intervention programs to reduce the burden of depression in later life.

Keywords: psychological and social aspects; depression; general

Introduction

Promoting 'healthy ageing' in later life has become a key policy goal for many governments. Consequently, there is a growing interest in the relationship between labour market participation in later life and health. This is important as de-industrialisation, organisational restructuring, and international competition have increased the risk of job loss for older workers over the past few decades (Kollmeyer & Pichler, 2013; Sweet, 2007). The shift to service sector economies has impacted particularly heavily on older (male) workers as they tended to be concentrated in the traditional manufacturing industries (Appelbaum, Patton, & Shapiro, 2003; Mollica & DeWitt, 2000). As a consequence, the rates of job exit and precarious employment in later life have grown considerably in recent years (Organisation for Economic Co-operation and Development [OECD], 2013a; Schmitt, 2004). This can be especially problematic for older people as they have relatively low rates re-employment following job loss (Chan & Stevens, 2001). This is partly because older workers are more likely to have accumulated non-transferable firm- and/or industry-specific skills, wages, and benefits (Brand, Levy, & Gallo, 2008; Dooley & Catalano, 1999) and partly due to negative stereotypes of older people and age discrimination in recruitment (Bennington, 2001).

However, whilst the health effects of employment exit in later life have important policy implications, the evidence so far is ambiguous (Oksanen & Virtanen, 2012). One possible explanation for these inconsistencies is that the majority of studies focus on the event of job loss, through which individuals simply transition from one state to another, and do not give sufficient attention to the processes involved in leaving work. Yet, throughout the advanced industrialised economies employment exit in later life has been successively de-standardised and de-institutionalised over the past few decades (Kohli & Rein, 1991). Even though the retirement policy pendulum has swung from facilitating early labour market exit in the 1990s to extending working life today, both approaches have effectively eroded the notion of a fixed retirement age. This is clearly the case in Sweden. In line with a number of other European countries, the Swedish government recently abolished a fixed retirement age of 65 and replaced it with a 'retirement corridor' that allows people to retire between the age of 61 and 67 years. Not only does this mean that there are now more varied routes out of the labour market, such as early or late retirement, disability pension, unemployment or some combination thereof, it also means that the role and responsibility for the timing of labour market exit has become central. These developments mean that nominally identical labour market categories, such as early retiree, might actually differ widely in terms of the conditions of the retirement process. Hence, it is increasingly important to differentiate between different types of employment exit in later life in terms of the control exercised over the process of leaving work.

One potential framework to explore different forms of employment exit is the 'push–pull' model developed by

*Corresponding author. Email: martin.hyde@su.se

Shultz, Morton, and Weckerle (1998). Although originally formulated to focus specifically on retirement it can be applied more generally to all forms of employment exit. Rather than treating job leavers as a homogenous group, this model differentiates between push and pull factors that influence the decision to leave work. In the model pull factors, such as leisure interests, are presented as positive aspects that encourage the individual to choose to leave work. On the other hand, push factors, such as one's own poor health, the poor health of a family member or employer policies, tend to be the external forces that drive people out of work. From this perspective, employment exit is not a single, unitary experience but can be driven by various combinations of push and pull factors and have positive or negative outcomes. However, the model predicts that when there is a greater balance of push over pull factors the experience and consequences of employment exit are more likely to be more negative (Shultz et al., 1998).

Whilst this model was a welcome move towards greater differentiation of types of employment exit, it is not unproblematic. As its authors note the assessment of whether something is a push or a pull factor is a subjective process. Therefore, although push and pull factors should map closely on to whether employment exit was involuntary or voluntary, there is always the risk of misclassification. In their study, Shultz et al. (1998) found that about 20% of respondents who were allocated to the involuntary retirement group on the basis of their responses to questions about 'push−pull' factors identified themselves as voluntary retirees. Therefore, if one is specifically interested in the impact of (in)voluntary employment exit on health, it is important to ask directly about the degree of choice and control that people had over their decision to leave work. Although Beehr (1986) argues that this decision exists on a continuum, from completely involuntary to completely voluntary, most studies treat these as binary categories. Dorn and Sousa-Poza (2010) define 'voluntary' employment exit as that which is due to an individual's relative preference for leisure versus the feasible alternative of continuing work. Conversely, they identify 'involuntary' exit as that which is caused by (often unexpected) employment constraints. In line with this distinction, and evidence from elsewhere (see Calvo, Sarkisian, & Tamborini, 2013; Henkens, van Solinge, & Gallo, 2008; van Solinge, 2007), we argue that it is not the form of employment exit per se but the degree of choice that the person is able to exert over leaving work that is important for subsequent health and well-being. Thus, unemployment can be voluntary if someone choses to leave a job to look for another job or takes time out from work. On the other hand, retirement is often perceived as involuntary (Dorn & Sousa-Poza, 2010). Studies from Europe and the US suggest that between 20% and 30% of retirees believe that they were forced to retire (Henkens et al., 2008; Szinovacz & Davey, 2005). It has been estimated that 37.5% of early retirees in Sweden do so involuntarily (Dorn & Sousa-Poza, 2010). Involuntary unemployment in later life can also lead to retirement as older workers have lower rates of re-employment (Chan & Stevens, 2001) or simply become discouraged at the lack of job opportunities and 'elegantly withdraw' from the labour market (Brand et al., 2008; Fournier, Zimmermann, & Gauthier, 2011). Consequently, the utility of separating different forms of employment exit in later life, i.e. unemployment versus retirement, rather than focussing on voluntary versus involuntary exit, has been questioned (Mandemakers & Monden, 2013; Peracchi & Welch, 1994). Moreover, it is possible that focusing on just one form of involuntary employment exit in later life, i.e. unemployment, risks underestimating the total impact of involuntary exit on health in the older population. Following this argument, and in line with the approach taken elsewhere (Mandemakers & Monden, 2013; W.T. Gallo et al., 2004), we compared all forms of voluntary and involuntary employment exit in later life, regardless of the specific pathway out of employment, to get a fuller picture of the total amount of involuntary exit and estimate of the overall risk to mental health.

According to Bartley (1994), involuntary employment exit might negatively impact on health through a greater risk of poverty, increased stress, the adoption of poor health related behaviour, and/or the long-term effect of unemployment on the rest of the work career. Certainly losing one's job can often lead to material deprivation through the loss of wages (Heflin & Iceland, 2009). However, it can also lead to other forms of deprivation. Employment provides a number of non-economic latent functions, such as a daily structure and regular activity, identity and status that are lost when an individual is forced out of work (Jahoda, 1982; Nordenmark & Strandh, 1999). Losing one's job can also be an extremely stressful life event (Bartley, 1994; Henkens et al., 2008). Estimates suggest that around one-third of retirees report that they found the transition stressful (Bosse, Aldwin, Levenson, & Workmandaniels, 1991). This could be because they feel that they have lost important psychosocial resources such as goal and meaning in life, time structure, status, and social support (Dooley, Fielding, & Levi, 1996). It is plausible that this would be even more, if the transition was seen as involuntary. As Henkens et al. (2008) note, involuntary exit is at odds with the individual's perception of a well-timed departure from the labour force, this could result in a lack of opportunity to make adequate financial plans and/or contribute to sense of biographical disruption. This could lead to stress that might, in turn, increase the risk of becoming depressed. This is supported by evidence from more general research that shows that stress has a detrimental effect on mental health (Staufenbiel, Penninx, Spijker, Elzinga, & van Rossum, 2013).

Numerous studies have shown that involuntary exit from employment in later life is associated with poorer general health (Burgard, Brand, & House, 2007; Gallo, Bradley, Siegel, & Kasl, 2000; Isaksson & Johansson, 2000; van Solinge, 2007), poor psychological health (Berchick, Gallo, Maralani, & Kasl, 2012; Brand et al., 2008; Burgard et al., 2007; Calvo et al., 2013; Gallo, Bradley, Teng, & Kasl, 2006), an increased risk of hospitalisation (Hyde, Hagberg, Oxenstierna, Theorell, &

Westerlund, 2004), myocardial infarction, and stroke (Dupre, George, Liu, & Peterson, 2012; Gallo et al., 2004). Some studies show that it might also lead to an increased mortality risk (Browning & Heinesen, 2012). However, others find no such effect (Steenland & Pinkerton, 2008). It has also been shown to be associated with an increased alcohol consumption in certain groups (Kuerbis & Sacco, 2012), increase in body mass index (BMI) (Deb, Gallo, Ayyagari, Fletcher, & Sindelar, 2011; Henkens et al., 2008), and smoking relapse (Falba, Teng, Sindelar, & Gallo, 2005). Research also links job displacement to increase in subsequent levels of depression in the general population (Dooley et al., 1996; Turner, 1995) and amongst older people in particular (Berchick et al., 2012; Brand et al., 2008; Burgard et al., 2007; Calvo et al., 2013; Gallo et al., 2000, 2006; Leinonen, Lahelma, & Martikainen, 2013; Oksanen et al., 2011). This is an important area of research as, although, studies show that rates of depression fall in early old age (Blanchflower & Oswald, 2008), depressive symptoms remain amongst the most commonly reported psychological conditions in later life and can have a significant impact on functioning, quality of life, and life expectancy (Beekman et al., 2002; Blazer, 2003).

Despite the evidence that involuntary employment exit in later life increases the risk of depression, existing studies have a number of limitations. The majority of studies are based on US data and therefore might not be generalisable to European countries. Also the majority studies rely on self-reported measures of both depression and the reasons for employment exit. This raises the problem that any relationship might be an artefact of common-method variance. To the best of our knowledge, there are only two studies that have looked at employment exit and prescribed anti-depressants. Yet, both have their limitations. The study by Oksanen et al. (2011) is limited to public sector employees and therefore not generalisable to the whole working population. In contrast, Leinonen et al. (2013) do use a representative sample. However, because they use only register data, they were not able to control for a range of common health and health behaviours. Moreover, neither of these studies differentiated between voluntary and involuntary exit. Hence, this study is unique in so far as it is nationally representative of all those in employment in Sweden and analyses the effects of involuntary employment exit on both subjective and physician diagnosed measures of depression in later life.

Methods

The respondents were drawn from the 2006, 2008, 2010, and 2012 waves of the Swedish Longitudinal Occupational Survey of Health (SLOSH). SLOSH is a biennial longitudinal panel study that is representative of the Swedish working population in 2003 and 2005. The SLOSH sample was drawn from the 2003 and 2005 Swedish Work Environment Surveys (SWES). SWES is a cross-sectional, biennial survey of work environment conditions in Sweden that is based on a random stratified sample of gainfully employed people aged 16−64 years who responded to the Labour Force Survey (LFS) in the same year. The first wave of SLOSH in 2006 was based on a random stratified sample of respondents to the 2003 SWES ($N = 5985$; response rate was 65.0%). At wave 2, in 2008, the sample was boosted by adding new respondents from the 2005 SWES ($N = 11{,}441$; response rate 61.1%). This sample was then followed again in 2010 ($N = 10{,}078$; response rate 56.8%) and in 2012 ($N = 9880$; response rate 56.7%). However, although SLOSH is generally representative of the working population in Sweden, analyses performed by Statistics Sweden show that the non-respondents are more likely to be male, younger, have less education, and be born outside of Scandinavia.

SLOSH is a postal survey. Respondents are invited to complete one of the two self-completion questionnaires. One is intended for those who are 'gainfully employed', defined as those who are in paid work for at least 30% full time and the other is for those who are 'not gainfully employed', i.e. those working less than 30% or who are outside of the labour force, such as retirees. All responses are returned to the Statistics Sweden who constructs an annonymised data-set before releasing it to researchers. All data collection has been approved by national ethics boards.

For the purpose of these analyses, two samples were used. Both were restricted to respondents who had left the labour market aged 50 years and over since 2006. This left 1433 persons for the analyses of self-reported major depression (sample 1). However, for the analyses of the risk of becoming newly prescribed anti-depressant medication (ADM) the sample was further restricted to those who were prescription free before exiting employment. Following Mandemakers and Monden (2013), all individuals who lost a job were included regardless of successive employment or unemployment duration. Hence, all cases were retained even if they were re-employed following job loss ($n = 66$) with the exception of one case, which was prescribed ADM following re-employment as it is plausible that this diagnosis was caused by work-related factors in the new job. This produced a final sample of 1247 persons for the analyses on ADM (sample 2).

Variables

Dependent variables

Self-reported depression was measured using the Symptom Checklist Core Depression Scale ($SCL\text{-}CD_6$). This is an abridged version of the SCL-90 (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). Respondents were asked to report how much during the last week they had been troubled by the following six items: lethargy or feeling low in energy, feeling blue, blaming oneself, worrying too much, feeling no interest in things or everything is an effort. Response options ranged from not at all (0) to very much (4). Responses are summed to create an overall score that is dichotomised into those without major depression and those with major depression. A validation study in a sample of Swedish people of working age established a cut-off score of ≥ 17 (on a scale from 0 to 24) on $SCL\text{-}CD_6$, is an indicative of major depression, and

demonstrated the suitability of the scale for use in epidemiological research (Magnusson Hanson et al., 2013). This cut-off was employed in this study. Thirty-six cases were missing data on major depression at baseline and 65 were missing data at follow-up.

Data on prescription anti-depressants were taken from the National Prescribed Drug register. The Swedish Prescribed Drug Register is patient based and contains data for dispensed out-patient prescriptions at all Swedish pharmacies. Dispensed out-patient prescriptions account for around 82% of all defined daily doses, with the remainder coming from over-the-counter sales and inpatient use in hospitals (Wettermark et al., 2008). Data on the type of drug, dose, and date of prescription were matched to the survey respondents, using their personal identification (social security) number. ADM was identified by extracting all the redeemed prescriptions coded N06a according to the Anatomical Therapeutic Chemical system including preparations used in the treatment of endogenous and exogenous depressions. The date of the first filled prescription was calculated using the year and month of prescription. The data are maintained by the National Board of Health and Welfare (Socialstyrelsen) and delivered in an anonymised format. As these are register data, no cases were missing data.

Independent variables

All respondents who had left work were asked whether it was their own decision and given the following response options: 'Yes, I wanted to stop working', 'Yes, but I would have liked to continue working', 'No, but I was satisfied with stopping work' or 'No, I would have liked to continue working'. Those who gave either of the first two reasons were grouped into the 'voluntary employment exit' group whilst those giving either of the last two made up the 'involuntary employment exit' group. Although this is a subjective, retrospective assessment of the degree of choice exercised in leaving work, studies have shown a strong agreement between subjective and objective measures of the voluntariness of employment exit (Moore, Grunberg, Greenberg, & Sikora, 2007; Smith, 2006). This is important as it suggests that this is an accurate measure of the voluntariness of leaving work. Eighty-two people did not answer this question. Age, sex, marital status, and income were taken from the social security and tax register databases. These are administratively collected data that are linked to survey respondents from annonymised data delivered by Statistics Sweden. Hence, there were no missing data on these variables. Marital status was grouped into married and non-married. As socio-economic position has been shown to impact on the likelihood of exiting work involuntarily (Berchick et al., 2012; Radl, 2012) we included gross income from wages prior to job loss. This was log transformed to account for the skew in the original distribution. Age at employment exit was based date of birth and self-reported year and month of job loss. As the global recession occurred during the study period, it was felt that it was still important to include year of job loss to control for any possible impact that this might have. There were no missing data for age of job loss or year of job loss. Health-related covariates were taken from the wave prior to job loss. General health prior to job loss was based on a single item that asked respondents to rate their health from 'Very good' to 'Very Poor'. This was dichotomised so those reporting 'Very good' or 'Good' health were grouped together as having 'Good Health' and those reporting 'Neither Good nor Bad, 'Poor' or 'Very Poor' health were grouped as having 'Not Good Health'. Twenty-three people were missing data for this variable. BMI prior to job loss was based on self-reported height and weight and transformed into two categories: not overweight or obese (BMI < 25) or overweight or obese (BMI 25+). Seventy-nine cases were missing data on BMI. Smoking behaviour prior to job loss was based on self-reported data and simply grouped into current smokers and non-smokers. Fourteen people were missing data on smoking. Exercise activity prior to job loss was also based on a single self-reported item which asked 'How much exercise do you get? Include any walking or cycling you do to work', and was grouped into whether the respondent did any exercise or not. Twenty people were missing data on exercise.

Analyses

Two separate sets of analyses were carried out. For the risk of reporting major depression, respondents had to be in employment for at least one wave and not be in employment in the subsequent wave. The self-reported year of employment exit was used to identify the pre- and post-job exit waves. Thus, if, in 2010, a respondent recorded that they had left work in 2009 then the 2008 wave was used to provide information on socio-demographics, health, health behaviours, and major depression prior to employment exit and the 2010 wave was used to assess major depression following exit. Although it was possible for respondents to re-enter employment in subsequent waves only two individuals had left, re-entered, and left work again during the study period. For these respondents, only their last transition, i.e. between 2010 and 2012, was used. Thus, each respondent contributed only one pre- and one post-job loss observation. Logistic regression analyses, controlling for baseline measures, were performed to identify the risk of reporting major depression in the wave following employment exit.

As data was available on the year and month at which respondents were prescribed ADM and the year and month that they left work. Cox proportional hazards regression analysis was used to estimate hazard ratios for the risk of being prescribed ADM. Individuals were followed up from the time at which they left work until their first purchase of an ADM or until the end of the study period at the end of 2012. Once individuals achieved either of these statuses they no longer contributed to the model. Thus, first purchase of ADM was what counted and subsequent purchases of ADM were not considered.

Table 1. Sample description for the two main analyses (%).

	Sample 1: self-reported depression as outcome	Sample 2: prescription of anti-depressants as outcome
Involuntary job loss	21.91	20.12
Major depression before job loss	4.08	–
Major depression after job loss	3.00	–
Prescribed anti-depressants after job loss	–	4.41
Not good health before job loss	22.55	19.71
Female	55.40	52.21
Not married	33.71	32.16
Overweight or obese before job loss	55.10	54.62
Exercises regularly before job loss	44.59	44.38
Does not smoke before job loss	83.71	83.94
N	1433	1247

The mean number of months until purchasing a prescription was 18 months (with a range from 0 to 57 months). As with the previously described analyses, baseline measures were taken from the wave immediately prior to employment exit.

Results

The two samples are described in Table 1. In each, around one-fifth reported that they had left work involuntarily. In the analytic sample for self-rated major depression, around 4% reported such depression prior to employment exit and 3% following exit. For the analytic sample for being prescribed ADM just over 4% were newly prescribed following exit. Around one-fifth of both samples had poor health, around 55% were overweight or obese, 44% did some exercise, and 83% did not smoke prior to leaving work. Just over half were female and one-third were not married. The average age at employment exit was 63 years and the mean annual income before exit was £32,000.

The results of the logistic regression analyses, presented in Table 2, show that those who left work involuntarily are over three times more likely to report major depression than those who chose to leave work (OR 3.16; CI 1.32−7.61). Prior depression (OR, 3.92; CI, 1.25−12.35) and poor heath (OR, 4.11; CI, 1.78−9.49) were also statistically significantly associated with reporting major depression following job loss. Not being married (OR, 2.56; CI, 1.05−6.24), exercising regularly (OR, 0.39; CI, 0.15−0.99), and being a non-smoker (OR, 0.38; CI, 0.16−0.93) prior to job loss were associated with being less likely to report depression following employment exit.

The results of the Cox proportional hazards regression analyses, shown in Table 3, show a similar picture for the impact of the voluntariness of employment exit. Those who report that they left work involuntarily had an elevated risk of becoming prescribed ADM of over twice that for those who chose to leave work (HR, 2.08; CI, 1.03−4.21). Income prior to job loss (OR, 0.48; CI, 0.25−0.95) was statistically significantly associated with the lower odds of being prescribed ADM following employment exit.

Discussion

Involuntary exit from employment in later life has been shown to be associated with a range of poor health and poor health behaviours. However no single study has yet, to the best of our knowledge, been able to look at how involuntary employment exit impacts on both subjective and physician diagnosed measures of depression in a nationally representative sample. By using the data from SLOSH and matching these to the drug register, this study was able to do this. The results indicate that involuntary exit from employment is a risk factor for both self-reported major depression and the risk of becoming newly prescribed ADM amongst those aged 50 and over living in Sweden. The results support those found elsewhere and suggest that this is a serious issue that impacts on a range of heath indicators.

The study is not without its limitations. Despite a large sample size there are relatively few cases of major depression or prescribed ADM following employment exit. This is evident in the rather wide confidence intervals around the estimates in both analyses. Furthermore, as with all longitudinal studies, SLOSH suffers from sample attrition. However, analyses of dropout show that it is more likely to be younger respondents who do not remain in the study.

Relying on retrospective accounts for both the timing and degree of voluntariness of employment exit is potentially problematic. It is possible that people misremember the exact month that they left work. In an ideal study it would be possible to contact the respondent's previous employer and get objective data on the date of labour market exit. Not only would this provide objective data on this but it would add get greater resolution for the survival analyses by providing the exact date, rather than just month, of exit. The self-reported nature of major depression raises concerns about possible common-method variance. It is possible that those people who report being depressed following job loss could also interpret past events more negatively. Yet studies show that individual's assessment of their reason for leaving work accords well with objective measures. Moreover, the fact, the direction and magnitude of effect were similar for both the physician diagnosed and subjective measures of depression, suggests that this was not a major issue.

Table 2. Odds ratio and 95% CI for the risk of reporting major depression following job loss. Unadjusted and adjusted for prior depression, socio-economic characteristics, health, and health behaviours.

	Unadjusted		Fully adjusted	
	OR	95% CI	OR	95% CI
Voluntary job loss	1		1	
Involuntary job loss	**5.09**	**(2.57−10.01)**	**3.16**	**(1.32−7.61)**
No major depression before job loss			1	
Major depression before job loss			**3.92**	**(1.25−12.35)**
Year of job loss			0.93	(0.73--1.19)
Age at job loss			**0.86**	**(0.79−0.94)**
Good health before job loss			1	
Not good health before job loss			**4.11**	**(1.78−9.49)**
Male			1	
Female			2.41	(0-99-5.86)
Married			1	
Not married			**0.35**	**(0.14−0.87)**
Income (log)			1.21	(0.40−3.63)
Not overweight or obese before job loss			1	
Overweight or obese before job loss			0.62	(0.28−1.39)
Does not exercise regularly before job loss			1	
Exercises regularly before job loss			**0.39**	**(0.15−0.99)**
Smokes before job loss			1	
Does not smoke before job loss			**0.38**	**(0.16−0.93)**

Note: Figures in bold indicate $p > .05$.

There is also the possibility of reverse causation for major depression. For those who report suffering with depression in the wave prior to leaving work controlling for baseline measures ought to limit this problem. However, for those who report becoming majorly depressed following employment exit both events occur within the two-year window between waves. This is something of a black box as it is not possible to ascertain which happened first as it is not really possible to ask respondents when they began to suffer with major depression using this scale. However, the results of the analyses for the risk of becoming prescribed ADM, where there is much less

Table 3. Hazard ratio and 95% CI for risk of becoming prescribed anti-depressants following job loss. Unadjusted and adjusted for socio-economic characteristics, health, and health behaviours.

	Unadjusted		Fully adjusted	
	HR	95% CI	HR	95% CI
Voluntary job loss	1		1	
Involuntary job loss	**2.52**	**(1.38−4.60)**	**2.08**	**(1.03−4.21)**
Year of job loss			1.10	(0.88−1.39)
Age at job loss			0.97	(0.89−1.06)
Good health before job loss			1	
Not good health before job loss			1.57	(0.79−3.12)
Male			1	
Female			1.91	(0.98−3.72)
Married			1	
Not married			0.95	(0.49−1.81)
Income (log)			**0.48**	**(0.25--0.95)**
Not overweight or obese before job loss			1	
Overweight or obese before job loss			1.11	(0.59−2.09)
Does not exercise regularly before job loss			1	
Exercises regularly before job loss			0.71	(0.37−1.38)
Smokes before job loss			1	
Does not smoke before job loss			0.53	(0.26−1.06)

Note: Figures in bold indicate $p > .05$.

chance of reverse causation, suggest that this is not the main driver for the relationship between involuntary employment exit and major depression.

It is important to consider some of the potential limitations of the data on prescription ADM. Whilst it is good to have a more objective measure of depression there is a chance of some possible misclassification in the ADM data as it is estimated that around 30% of ADM prescriptions are used for problems other than depression (Sihvo et al., 2008). Moreover, it needs to be noted that these data are only available for those persons who, once prescribed ADM, actually redeem their prescriptions at a pharmacy. However, whilst this is an issue, Hovstadius and Petersson (2011) estimate that only 3% of those who become prescribed medication in Sweden fail to redeem their prescription.

Finally, whilst the results suggest that there is a real effect of the voluntariness of employment exit on health in later life, the mechanisms through which this operates require further research. As noted, Bartley identifies a number of different factors that might lead to poorer health amongst those out of work. However, whilst we controlled for possible confounders prior to employment exit, we were unable to look at a number of possible factors following exit that might shed light on these findings. It has been argued that employment exit can often lead to a significant reduction in income. Unfortunately, the measure of income available in the SLOSH study is based solely on income from wages and therefore it is not possible to get a measure of income following employment exit. However, the Swedish benefits system is relatively generous and job loss does not necessarily entail a huge reduction in income. Sweden has a universal unemployment benefits system. In addition, approximately 90% of workers are members of an unemployment fund. Once the unemployed members of such funds are entitled to receive an earning-related daily allowance up to 80% of their average annual income for the first 200 days, after which the rate decreases to 70% until the 300 day. Replacement rates for pensions are also relatively high and redistributive. A median earner can expect a replacement rate of 55% whilst someone earning half of the median income can expect a 68% replacement rate (Organisation for Economic Co-operation and Development, 2013b). Thus, whilst it would be good for future studies to get accurate measures of post-employment exit income, these figures suggest that material deprivation is unlikely to be the sole cause of depression following job loss in later life in Sweden.

Overall the study shows that involuntary exit from employment in later life is a risk factor for subsequent depression. This suggests that the negative impact of involuntary exit could be minimised through interventions aimed at older workers who suffer such exit and by policies aimed at improving the possibilities for older people to find new jobs if they so desire. Health practitioners should be aware of this when dealing with older patients and ask about their employment history.

Funding

This work was supported by the Swedish Research Council for Health, Working Life and Welfare [grant number 2010-1142].

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