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Job-loss and weight gain in British adults: Evidence from two longitudinal studies

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ABSTRACT

Overweight and obesity have been associated with unemployment but less is known about changes in weight associated with changes in employment. We examined weight changes associated with job-loss, retirement and maintaining employment in two samples of working adults in the United Kingdom. This was a prospective study of 7201 adults in the European Prospective Investigation of Cancer (EPIC)-Norfolk study (aged 39–76 years) and 4539 adults in the British Household Panel Survey (BHPS) who were followed up over 43 months and 26 months, respectively. In both samples, changes in measured (EPIC) and self-reported (BHPS) weight were computed for each participant and assessed in relation to three employment transitions: maintaining paid employment, retirement and job-loss. Regression models adjusted for potential confounders. Further analyses evaluated the contribution of diet, physical activity and smoking to weight gain. In EPIC-Norfolk, weight change differed across the three employment transitions for women but not men. The mean (95% CI) annualised change in weight for women who became unemployed over the follow-up period was 0.70 (0.55, 0.85) kg/y while those who maintained employment gained 0.49 (0.43, 0.55) kg/y ($P = 0.007$). Accounting for changes in smoking, diet and physical activity did not substantially alter the difference in weight gain among groups. In BHPS, job-loss was associated with weight gain of 1.56 (0.89, 2.23) kg/y, while those who maintained employment 0.60 (0.53, 0.68) kg/y ($P < 0.001$). In both samples, weight changes associated with retirement were similar to those staying in work. In BHPS, job-loss was also associated with significant declines in self-reported well-being and increases in sleep-loss.

Two UK-based samples of working adults reveal strong associations between job-loss and excess weight gain. The mediating behaviours are so far unclear but psychosocial mechanisms and sleep-loss may contribute to the excess weight gain among individuals who become unemployed.

1. Introduction

There is both a scientific and policy interest in the relationship between employment and health in large part because unemployed adults have often been characterised as having unhealthy lifestyles (Bolton and Rodriguez, 2009; Schunck and Rogge, 2010), higher risk of chronic disease (Alavinia and Burdorf, 2008; Kessler et al., 1987) and higher risk of premature mortality (S. Montgomery et al., 2013; Morris et al., 1994). Unemployment has also been associated with unhealthy weight status, including overweight and obesity.

Population-level rates of unemployment have been positively associated with BMI and obesity in both cross-sectional (Akil and Ahmad, 2011; Slack et al., 2014) and longitudinal analyses (Latif, 2014). Individual-level studies have found a cross-sectional relationship between unemployment and underweight (S. M. Montgomery et al., 1998) and higher BMI among men (Schunck and Rogge, 2010). The associations for women have been more consistent, with unemployed women more likely to be overweight and obese than their employed counterparts (Kang et al., 2013; Rosmond and Bjorntorp, 1999; Sarlio-Lahteenkorva et al., 2006). Studies of individual-level employment history in samples of mixed sex found that more prolonged experience of unemployment was

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associated with higher BMI (Schunck and Rogge, 2010) and higher odds of obesity, particularly for women (Laitinen et al., 2002). However, no such associations were found in a sample of male construction workers (Leino-Arjas et al., 1999). Taken together, these studies provide evidence of an association between unemployment and higher weight, but there are still questions about whether unemployment leads to weight gain, and also how this association might differ by sex.

More robust prospective studies of job-loss and *change in weight* could help clarify the relationship between unemployment and excess weight. The few prospective studies found that employed persons who experienced job-loss gained more weight compared to those remaining in employment (Marcus, 2012; Morris et al., 1992). However, only one of these studies was UK-based (Morris et al., 1992) and both examined self-reported rather than measured weight. Furthermore, if job-loss is associated with weight gain, then there is also a need to examine concurrent behaviours that may contribute to weight gain. Changes in diet, physical activity and smoking have been associated with weight gain (Mozaffarian et al., 2011) and may also be linked to employment circumstances (Ali and Lindström, 2006; Dave and Kelly, 2012; Falba et al., 2005). Additionally, sleep disturbances are linked to obesity (Spiegel et al., 2009) and weight gain (Spaeth et al., 2013) and poor sleep quality has been linked to perceived job insecurity (Burgard and Ailshire, 2009), but little is known about the link between job-loss and sleep.

In two UK-based samples of employed adults, this study used a prospective design to examine the association between employment change and weight change among three groups: Those who maintained employment over the follow-up period, those who retired and those who became unemployed. Further analyses also explored whether changes in diet, physical activity and smoking affected the employment transition-weight gain relationship and examined changes in sleep and self-reported well-being during the employment transition.

2. Materials and methods

2.1. Study samples

We used two population-based, longitudinal data sources which we describe in turn below. Because of the design and time frame for each of study samples, these two data sources allowed us to assess the generalisability of our findings by seeing whether associations of job-loss with weight change (our primary outcome) were consistent in different demographic, geographic and macroeconomic contexts. Moreover, the two data sources allowed us to explore a wider range of concurrent behaviours and secondary outcomes than if we had focused on only one data source. In both data sets, we focused on employed people to study weight changes in relation to three employment exposures: maintaining employment, retirement and job-loss. A schematic for the timeline for ascertainment of exposures and outcomes is illustrated in Fig. 1.

2.2. EPIC-Norfolk

The European Prospective Investigation of Cancer cohort study in Norfolk (EPIC) is a population-based study of dietary and lifestyle determinants of cancer and other chronic disease (Day et al., 1999). Recruitment was based on registers of general practices in the county. Participants were aged 39–76 at the time of entry (1993–97), where they completed questionnaires and dietary assessments and their weight and other measurements were recorded by trained research nurses. All volunteers gave written informed consent and the study was approved by the Norwich district ethics committee.

2.3. BHPS

The British Household Panel Survey (BHPS) was a multi-purpose, population-based longitudinal study of private households across Great Britain, conducted from 1991–92 to 2008–09 as an annual survey ('wave') of each adult member of a nationally-representative sample (Taylor et al., 2001). Only two waves (collected September 2004–May 2005 and September 2006–May 2007) included self-reported height and weight, and these formed the baseline and follow-up periods in the present study. In addition to these waves, data on employment status was also reported at an intermediate wave ('mid-point' in the present analysis, September 2005–May 2006). Conduct of the BHPS followed the ethical guidelines of the Social Research Association. No ethical approval was required for this secondary analysis of anonymised data.

2.4. Sample selection

In the EPIC study, of 25 639 adults recruited at baseline, restricting the sample to those who were employed at baseline and were weighed and provided data on key covariates, resulted in a sample of 12 210. Further restriction to include those for whom data on employment and health from an in-person follow-up were available resulted in an analytical sample of 7201. The BHPS was restricted to participants who reported details of their 'current economic activity' at follow-up and who had reported this as being 'employed' both at baseline and at midpoint. Excluding women who reported (at any of the three time points) as being pregnant or on maternity leave, students, people who reported being long-term sick and persons younger than 18 years of age and those lacking key covariates resulted in an analytical sample of 4539. The resulting data sets represented a complete-case analysis. A depiction of the restriction of both samples is presented in Supplementary Fig. S1. To examine the potential for sample bias resulting from this selection process, we made a quantitative comparison of the demographic, socioeconomic and other characteristics of the analytical and full samples of employed adults in both data sets. The comparison, shown in Supplementary Table S1, indicated that both analytical samples were similar to the full samples in most respects, with the analytical sample having slightly more women in the EPIC sample but fewer women in the BHPS sample. In both samples, restriction resulted in slightly fewer smokers and people in moderate or poor health.

2.5. Exposure: transitions in employment status

Classification of employment transitions in the EPIC and BHPS data was based on the reported employment status at follow-up. In EPIC, those classified as remaining employed had stated they were working at follow-up (n = 5144, 71%). Those who were classified as retired had indicated they were retired and not working (n = 1327, 18%) as well as those who defined themselves as retired but also reported working (n = 226, 3%). The 'lost job' category combined all those who were not working at follow-up and also defined themselves as unemployed (n = 154, 2%), unemployed and retired (n = 130, 2%) and persons who were not employed or retired but did not provide any other reason for being out of work (n = 195, 3%). We reasoned that this inclusive approach to defining the 'lost job' category was important for older adults, who nearing the end of their working life, when confronting the loss of a job might have ambiguous feelings about their status and perhaps elect to regard themselves as partly retired (e.g., both unemployed and retired) or otherwise not identify as unemployed if they were taking on unpaid domestic or caring roles for spouses or other family members. A fourth group 'mixed classification' included individuals who