Web appendix for Ferrie et al Job insecurity as a risk factor for diabetes: a collaborative analysis of 140 825 workers

Web appendix 1: Literature review (eFigure 1)

Selection criteria and search strategy

A systematic computerised search of the literature using the PubMed and Embase databases (articles indexed to November 18, 2014) used the following search terms without restrictions: "[job and insecurity] or [job and security]" and "[glycosylated and haemoglobin], or [glycated and haemoglobin] or glucose or diabetes". Titles and abstracts were independently reviewed by two researchers (JEF, MV) based on a broad range of criteria for the exposure (job insecurity) and the outcome (incident diabetes). Using the Web of Science (to November 18, 2014), we also carried out a forward citation search. All potentially eligible articles were reviewed (JEF, MV) to determine whether they met the inclusion criteria.

Potentially eligible articles were screened and articles that met all the following criteria were selected for further review: (i) prospective design (cohort study) with individual level data on self-reported job insecurity at baseline (excluding indirect exposures such as organisational downsizing)[3]; (ii) incident diabetes (prevalent diabetes at baseline excluded); and (iii) reported either estimates of relative risk, odds ratios, or hazard ratios with 95% confidence intervals, or sufficient information to calculate these.

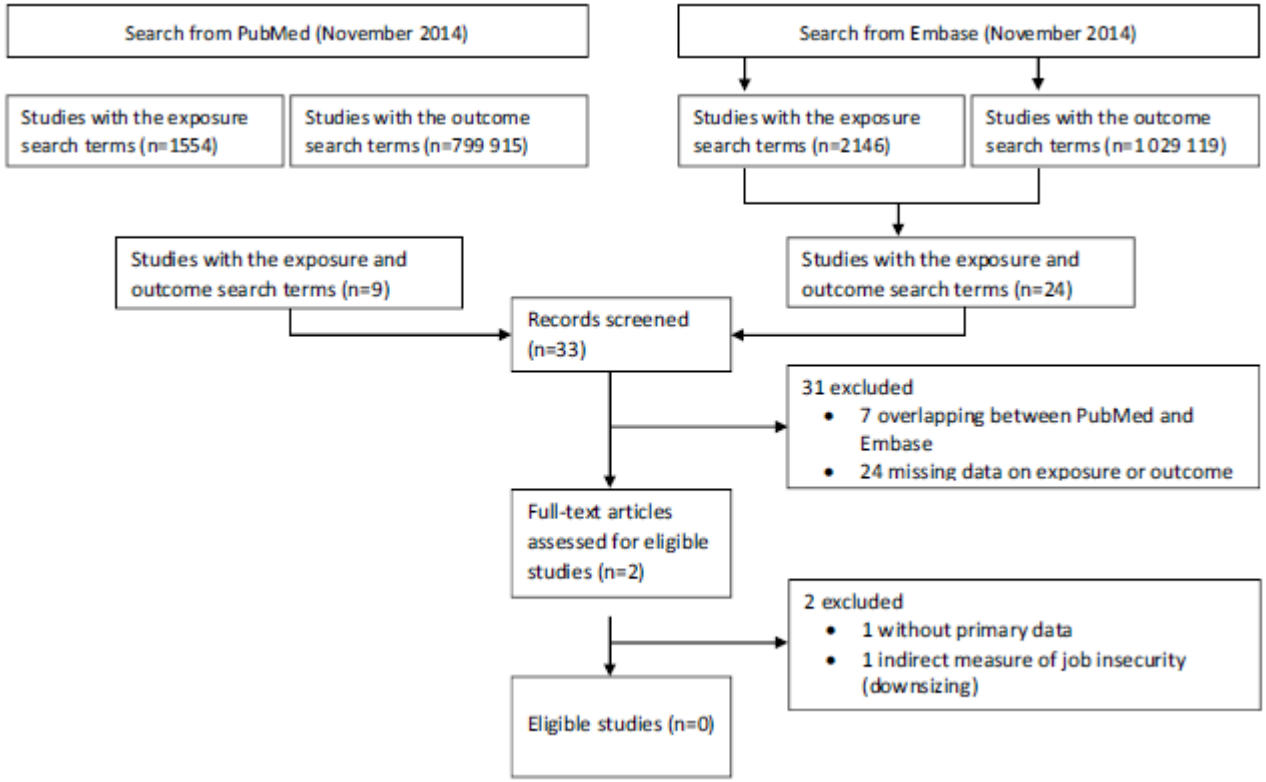
Literature search – Results

We identified 1554 studies on job insecurity in PubMed and 2146 studies in Embase. Searches on diabetes identified 799,915 and 1,029,119 studies respectively. Of the 9 studies from PubMed and 24 studies from Embase with both search terms, job insecurity and diabetes, in the publication, 7 were overlapping, leaving 26 unique citations. Based on reading the Abstracts, 24 of these did not have either job insecurity as the exposure, or incident diabetes as the outcome and were excluded. One of these excluded records was a Cohort Profile for the Health and Retirement Study [1]. The Health and Retirement Study is an open access dataset. However, it did not appear to include exposure and outcome data suitable for inclusion in the present analyses. The two remaining papers were selected for further review [2,3]. On further

review, neither of these papers met the inclusion criteria; one was a conceptual review [2], and in the other, job insecurity was measured indirectly as downsizing [3] – eFigure 1. As a consequence, no published studies were available for inclusion in the analysis.

Although data from the 2 papers selected for further review were not included in the analysis we did a manual search of the reference lists of both publications [2,3]. This search provided no new individual studies meeting the inclusion criteria.

eFigure 1. Search strategy



References

1. Sonnega A, Faul JD, Ofstedal MB, Langa KM, Phillips JW, Weir DR. Cohort Profile: the Health and Retirement Study (HRS). Int J Epidemiol. 2014;43:576-85.
2. Costa G, Marra M, Salmaso S; Gruppo AIE su crisi e salute. [Health indicators in the time of crisis in Italy]. Epidemiol Prev. 2012 Nov-Dec;36:337-66. [Article in Italian]
3. Modrek S, Cullen MR. Health consequences of the 'Great Recession' on the employed: evidence from an industrial cohort in aluminium manufacturing. Soc Sci Med. 2013;92:105-13.

Web Appendix 2: Description of cohort studies included in the meta-analysis
eTable 1: Description of cohort studies

Study	Main focus	Baseline year*	National unemployment rate**	Target population	Age range at baseline	Initial response rate†	Response rate at baseline††	Loss to follow-up‡
Open-access datasets Name (Acronym) **Country**								
American's Changing Lives (ACL)[12] **USA**	Social Disparities in Health and Aging	1986	6.7%	Nationally representative, but African Americans and people age 60+ oversampled 2:1	25 and over	68% - 70%	68% - 70%	15%
British Birth Cohort Study 1970 (BCS)[13] **UK**	Originally set up to examine the social and biological characteristics of the mother in relation to neonatal morbidity	2004-2005	4.8%	17,000 people born in England, Scotland and Wales in a single week in 1970.	34-35	NA	58%	18%
British Household Panel Survey (BHPS)[14] **UK**	Multi-purpose study	1991	6.9%	Representative sample households in 250 areas – all adults included	16-97	74%	‡‡	22%
Household, Income and Labour Dynamics in Australia survey (HILDA)[15] **Australia**	Economic and subjective well-being, labour market dynamics and family dynamics	2005	5.1%	National probability sample Australian households in private dwellings	14-92	66%	‡‡	19%
Midlife in the United States (MIDUS)[16] **USA**	Role of behavioural, psychological, and social factors in how people age (main respondents, siblings, city oversample and twin sub-sample)	1995-1996	5.6%	Nationally representative sample community dwelling English speaking adults	25-74	61%	61%	34%
National Child Development Study 1958 (NCDS)[17]	Social and obstetric factors associated with still birth and infant mortality	1999-2000	5.4%	17,000 people born in England, Scotland and Wales in a single week in	41-42	NA	65%	18%

UK				1958				
Wisconsin Longitudinal Study of Graduates (WLSG)[18] **USA**	Intergenerational relationships, family functioning, physical and mental health, well-being, morbidity and mortality from late adolescence to 2011	1992-1993	5.2%	Random sample of men and women graduates of Wisconsin high schools in 1957	53-54	>95%	67%	12%
Wisconsin Longitudinal Study of Siblings (WLSS)[19] **USA**	As for WLSG	1993-1994	4.6%	Selected sibling of participants in WLSG	45-64	NA	45%	13%
IPD-WORK DATASETS								
Copenhagen Psychosocial Questionnaire Version 1 (COPSOQ-I)[20] **Denmark**	Psychosocial work environment, well-being and health.	1997	6.1%	Nationally representative sample of the Danish working population	20-60	61%	61%	<5%
Copenhagen Psychosocial Questionnaire Version 2 (COPSOQ-II)[21] **Denmark**	Psychosocial work environment, well-being and health.	2004-5	5.3%	Nationally representative sample of the Danish working population	20-60	60%	60%	<5%
Danish Work Environment Cohort Study (DWECS)[22] **Denmark**	(1) Occupational risk factors, and prevalence and incidence of health symptoms. (2) Changes in health and labour market status as possible consequences of occupational risk factors.	2000	4.6%	Nationally representative sample of the Danish working population	18-69	N/A	75%	<5%
Finnish Public Sector Study (FPS)[23] **Finland**	Effects of quality of working life and working conditions on morbidity, well-being and disability; biological, behavioural, and psychological mechanisms; extended work careers and post-retirement healthy ageing	2000-2002	9.3%	Public sector workers in 10 municipalities and 21 hospitals in the same areas	17-65	N/A	68%	<5%

Health and Social Support (HeSSup)[24] **Finland**	Social support and early retirement; suicide; accidental death; and acute myocardial infarction.	1998	11.3%	National stratified random sample age: 20–24, 30–34, 40–44, and 50–54	20-54	40%	40%	<5%
Intervention Project on Absence and Well-being (IPAW)[25] **Denmark**	Psychosocial work environment aspects as risk factors for sickness absence.	1996-1997	6.2%	Employees from a pharmaceutical company, municipal technical services and nursing homes	19-70	76%	61%	<5%
Burnout, Motivation and Job Satisfaction Study (PUMA)[26] **Denmark**	A five-year prospective intervention study on burnout in the human service sector.	1998-2000	5.1%	Employees from 7 human service organizations	18-69	80%	75%	<5%
Still Working[27] **Finland**	Work environment and well-being in a large-scale industrial forestry company.	1986	5.4%	All industrial employees	18-65	76%	76%	<5%
Whitehall II[28] **UK**	Socioeconomic inequalities in health.	1995-1996	8.4%	White collar civil servants	41-61	73%	84%	23%
Work, Lipids, Fibrinogen-Norrland (WOLF-N)[29] **Sweden**	Psychosocial work environment, cardiovascular risk factors and cardiovascular disease	1996-1998	7.5%	Workers in Jämtland and Västernorrland counties	19-65	>90%	>90%	<5%
Work, Lipids, Fibrinogen-Stockholm (WOLF-S)[30] **Sweden**	Psychosocial work environment, cardiovascular risk factors and cardiovascular disease	1992-1995	7.3%	Workers in Stockholm county	19-70	76%	76%	<5%

*Baseline year for the current study ** At baseline for the current study

† Initial response rate - response rate at recruitment †† Response rate at baseline for the current study - if study recruitment was prior to the baseline for the current study this will be the response rate among initial recruits less participants who have died or permanently withdrawn

‡ Loss to follow-up between baseline for the current study and end of follow-up for incident diabetes

‡‡ Could not be calculated because new participants have been added into the cohort over the years and because the baseline year for measurement of job insecurity varied between participants

NB. Ethical approval for all the studies in the IPD-Work Consortium was provided by the relevant Ethics committee, except for those conducted in Denmark where questionnaire- and register-based studies do not require approval from the Danish National Committee on Biomedical Research Ethics. References are numbered as in the main document.

Web appendix 3: Quality assessment of included studies

To assess the quality of the studies we used the Cochrane Risk of Bias Tool for cohort studies.[1] Bias in seven domains was evaluated via the following questions:

1. Was selection of exposed and non-exposed cohorts drawn from the same population?
2. Can we be confident in the assessment of exposure?
3. Can we be confident that the outcome of interest was not present at start of the study?
4. Did the statistical analysis adjust for the confounding variables?
5. Can we be confident in the assessment of the presence or absence of confounding factors?
6. Can we be confident in the assessment of outcome?
7. Was the follow up of cohorts adequate?

Studies were evaluated in relation to each question using 4 categories: “definitely yes” (++), “probably/mostly yes” (+), “probably/mostly no” (-), and “definitely no” (--). The quality of the study was considered high if all domains were evaluated favourably.

1. Higgins JPT, Green S. Cochrane handbook for systematic reviews of interventions version 5.1.0: The Cochrane Collaboration. Chichester: John Wiley & Sons, 2011.

eTable2 - Assessment of 7 domains of study quality and the overall quality score

Study	1 Exposed and unexposed from same population	2 Confidence in exposure assessment	3 Confidence in exclusion of prevalent cases	4 Comprehensive adjustments for confounders	5 Confidence in assessment of confounders	6 Confidence in outcome assessment	7 Adequate follow-up	HIGH QUALITY
Open-access datasets								
ACL	++	+	+	+	+	-	++	No
BCS	++	+	+	+	++	-	-	No
BHPS	++	+	+	-	+	-	+	No
HILDA	++	+	+	+	+	-	-	No
MIDUS	++	+	+	+	+	-	+	No
NCDS	++	+	+	+	++	-	+	No
WLSG	++	+	+	+	+	-	++	No
WLSS	+	+	+	+	+	-	++	No
IPD-Work datasets								
COPSOQ-I	++	+	+	-	+	+	++	Yes
COPSOQ-II	+	+	+	+	+	+	+	Yes
DWECS	++	+	+	+	+	+	+	Yes
FPS	++	+	+	+	+	+	+	Yes
HeSSup	+	+	+	+	+	+	+	Yes
IPAW	++	+	+	+	+	+	++	Yes
PUMA	++	+	+	-	+	+	++	Yes
Still Working	+	+	+	-	+	+	++	Yes
Whitehall II	++	+	++	+	++	++	++	Yes
WOLF-N	++	+	+	+	++	+	++	Yes
WOLF-S	++	+	+	+	++	+	++	Yes

Note: ++ = definitely yes; + = probably/mostly yes; - = probably/mostly no; - - = definitely no.

Web appendix 4: Adjustments and meta-regression

eTable3 - Association between job insecurity and incident diabetes; pooled data from 15 cohorts, multivariable-adjusted

	Odds ratio	**95% Confidence intervals**
Association between job insecurity and incident diabetes in 108,523 participants (2850 incident diabetes cases) adjusted for		
Age and sex	1.19	1.09 – 1.30
Age, sex and socioeconomic status (SES)	1.15	1.04 – 1.28
Age, sex, SES, and obesity	1.14	1.02 – 1.26
Age, sex, SES, and physical activity	1.14	1.03 – 1.26
Age, sex, SES, and alcohol consumption	1.15	1.04 – 1.27
Age, sex, SES, and smoking	1.16	1.04 – 1.28
Age, sex, SES, obesity, physical activity, alcohol consumption and smoking	1.12	1.01 – 1.24
Meta-regression (15 studies, n = 108,523 participants, 2850 incident cases of diabetes)		
Prevalence of job insecurity as the moderating factor in the job insecurity-diabetes association (per 5 percent)	1.02	0.94 – 1.11
Rate of unemployment as the moderating factor in the job insecurity-diabetes association (per 5 percent)	1.09	0.71 – 1.67
Length of follow-up as the moderating factor in the job insecurity-diabetes association (per 5 years)	1.04	0.74 – 1.45
Loss to follow-up as the moderating factor in the job insecurity-diabetes association (per 5 percent)	0.95	0.86 – 1.04