The Health and Safety Effects of Job Insecurity: An Evaluation of the Evidence

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Abstract

Since the 1930s, research has indicated that unemployment has serious effects on physical and psychological well-being. Recent evidence confirms these findings and provides greater insight into the processes by which unemployment influences health. It is less widely recognised that job insecurity can also adversely affect the health and well-being of workers. This paper reviews the rapidly growing body of research on the health impact of job insecurity and organisational practices that produce insecurity, such as downsizing and restructuring. Our review identified sixty-eight studies, using a variety of methods and measures, published internationally since 1966. Eighty-eight per cent of these studies indicated that job insecurity was associated with diminished worker health and well-being. Impli-

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cations of this finding for labour market and industrial relations policies, as well as occupational health and safety, are discussed.

Introduction

Most industrialised countries have experienced persistently high levels of official unemployment since the collapse of the long postwar economic boom (Burgess and de Ruyter, 2000; Watts and Mitchell, 2000). Exacerbated by high levels of hidden unemployment and underemployment, this development has imposed extensive costs on the community (Watts and Mitchell, 2000). Associated with these labour market conditions has been a dramatic growth in insecure, low paid and largely unregulated employment affecting an even greater number of workers (Burgess and de Ruyter, 2000; Quinlan, 1998). It is becoming clear that the costs of insecure employment are also significant and extensive (see Burgess and de Ruyter, 2000). This paper focuses on the health and safety cost of job insecurity, a problem that has been the subject of little systematic research until recently and remains poorly recognised by labour market policy-makers.

An association between unemployment and various indices of ill health is now well established (see, for example, Hamilton et al., 1990, Jahoda, 1982; Kessler et al., 1987b; Mathers and Schofield, 1998; Winefield et al., 2000). Early evidence of this relationship was published during the great depression of the 1930s. The work of Jahoda and her colleagues, demonstrating the profound psychological costs of mass unemployment in the Austrian village of Marienthal (Jahoda et al., 1933), effectively defined the research agenda for the next six and half decades and remains very pertinent today (Fryer, 2000: 6). Much subsequent research has largely served to confirm and expand Jahoda's groundbreaking findings. However, there are still avenues for fruitful contemporary research in the area. Significant recent work has, for example, focused on the variables and processes linking unemployment to health. This evidence will now be briefly discussed as background to a detailed review of the available evidence concerning the relationship between job insecurity and health.

Many studies have demonstrated relationships between unemployment and psychological symptoms including anxiety, depression, somatic complaints and diminished general psychological well-being (Hamilton et al., 1990; Iversen and Sabroe, 1988; Janlert, 1997; Kessler et al., 1987a, b; Warr, 1987). There is similar evidence of negative effects on several indices of physical health, including cardiovascular risk, blood pressure, morbidity for various infectious diseases and mortality rates (Hamilton et al., 1990;

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Hammarström, 1994a; Janlert, 1997; Mathers and Schofield, 1998; McClelland, 2000). Young unemployed men and women have significantly higher mortality rates, especially from suicide and accidents (Hammarström, 1994b).

Importantly, the numerous cross-sectional findings have been supported by longitudinal and quasi-experimental research that provides stronger evidence of cause and effect relationships and indicates that unemployment is followed by a deterioration in both psychological and physical health (Cobb and Kasl, 1977; Hamilton et al., 1990; Iversen and Sabroe, 1988). For example, in a large-scale investigation of Danish shipbuilders, Iversen and Sabroe (1988) reported that unemployment led to diminished psychological well-being and that subsequent re-employment led to improvement. However, data from men in a British national birth cohort showed that prolonged unemployment significantly diminished "health capital" by the age of 33 (Wadsworth et al., 1999), suggesting the health benefits of re-employment are not complete. Health capital was measured using body mass index, leisure time and exercise, frequency of eating fresh fruit, and smoking behaviour. The authors concluded that prolonged unemployment early in working life is likely to have a persisting effect on health. These results are significant, in view of the longstanding debate over the extent to which whether unemployment causes ill health or vice versa (Claussen et al., 1993; Janlert, 1997). It is now clear that ill health can be both a barrier to obtaining employment and an effect of losing it, and that the duration of unemployment may influence the degree of recovery (Claussen et al., 1993; Kessler et al., 1987a; Mastekaasa, 1996; Mathers and Schofield, 1998).

Clearly, unemployment does not affect health directly but rather it produces outcomes that, in turn, generate ill health. These factors may include not only diminished income and increased financial strain but also social and psychological factors, such as social isolation, inadequate social support and diminished self-esteem (Bartley, 1994; Ferrie et al. 2001; Janlert, 1997; Kessler et al., 1987b; Whelan, 1992). Several demographic factors may also influence the relationship between unemployment and ill health. Those identified to date include previous history of unemployment, age, gender and marital status (see for example, Claussen et al., 1993; Hammarström, 1994a; Hamilton et al., 1990; Winefield et al., 2000). Unemployment is also associated with behaviours that place health at risk, such as greater alcohol, tobacco and illicit drug consumption and inadequate diet (see for example, Hammarström, 1994a,b; Janlert, 1997; Montgomery et al., 1998). There may, of course, be complex interactions between

intervening variables, such as gender, marital status, social support and risk behaviours.

The relative importance of these intervening variables, and the various interactions between them, has yet to be clearly established. Kessler et al. (1987b), however, have argued that job loss principally influences health through two mechanisms: (1) by producing greater financial strain and (2) by leaving individuals more vulnerable to the health impact of negative life events. They found financial strain is of greater importance. Financial strain, and its impact, is often better understood at the level of the domestic or family unit, rather than simply at the individual level (see McClelland, 2000), and there is evidence that unemployment affects the health of other family members. For example, Mathers and Schofield (1998) cite longitudinal research in Britain indicating that the spouses of unemployed men had higher mortality rates than those of employed men. Other family effects included poorer infant growth rates, higher pre-natal and infant mortality rates and greater use of health services. Australian evidence indicates that children with an unemployed parent have a 26 per cent higher rate of chronic illness, make 20 to 30 per cent more visits to the doctor and make approximately twice as many outpatient visits (Mathers and Schofield, 1998). Harris and Morrow review the health effects of unemployment, and strategies to address them, in more detail elsewhere in this issue.

The Health Effects of Job Insecurity

Unemployment research has also highlighted the negative health effects of impending or threatened job loss. Cobb and Kasl's (1977) landmark quasi-experimental study of male, blue-collar workers before and after two plant closures provided an early demonstration of this phenomenon. Subsequently, other longitudinal studies have identified similar effects (see, for example, Iversen and Sabroe, 1988). Although the evidence suggests that the negative impact of job insecurity may be smaller than that of unemployment, and may depend upon a more subtle interplay between demographic factors such as education and income (Hamilton et al., 1990), it is still significant. The remainder of this paper is devoted to an examination of this evidence.

Official unemployment rates during the 1930s were at least four times higher than at present and concerns about the impact of unemployment overshadowed those regarding job insecurity. However, the issue was not entirely neglected by early investigators. For example, McQueen's examination of Australian dock workers in the 1940s all too clearly illustrated the

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debilitating long-term health effects of years of insecure employment under the notorious 'bull-system' (Nelson, 1957). Today, workers holding insecure or contingent jobs far outnumber the unemployed (even when account is taken of under-estimates of unemployment). In Australia, four in 10 workers are employed casually or work on a self-employed/own-account basis (Burgess and de Ruyter, 2000: 252). The impact of job insecurity is thus of particular contemporary relevance.

Workforce downsizing and restructuring (including outsourcing and privatization) have been pervasive in large public and private sector organisations since the 1980s (see Quinlan, 1998; Cascio, 1993). As downsizing frequently recurs through several cycles within a single organisation, it commonly raises concern about security even among those who retain their jobs. The so-called "survivor syndrome" documented amongst retained workers is characterised by demoralisation, risk aversion, diminished organisational commitment and poorer health (Cascio et al., 1993). These negative effects on surviving workers, and of course the greater impact on those who lose jobs, are all the more disturbing in light of evidence that workforce downsizing frequently fails to deliver its intended organisational or financial benefits. When applied in isolation, it generally does not produce sustained improvement in expense ratios, return on investment and assets, stock prices or competitiveness (Benson, 1999; Cascio, 1993; Cascio et al., 1997). Similarly, it frequently does not afford expected organisational benefits such as higher productivity, improved communication or more innovation and entrepreneurship (Cascio, 1993; Cascio et al., 1997). Many of these failures appear to arise because downsizing and restructuring are approached as short-term, simplistic attempts to reduce labour costs rather than as components of systematic strategies designed to improve organisational performance.

Since the 1980s, researchers in medicine, public health, psychology and several other fields have devoted increasing attention to the health effects of job insecurity, particularly the impact of downsizing and restructuring on surviving workers. This research, conducted in several countries and appearing in a widely dispersed array of publications, has not yet attracted serious attention from governments and labour market policymakers. The remainder of this paper reviews 68 studies concerning the health effects of downsizing, restructuring and similar organisational sources of job insecurity published internationally over the past 35 years. It does not examine evidence regarding small business employees, self-employed subcontractors or temporary, leased and outsourced workers for whom job insecurity may also be an influence on health outcomes (for a more comprehensive

review of research on the OHS effects of precarious employment see Quinlan et al. (2001)).

Literature Survey

An extensive search of published research concerning the impact of job insecurity on worker health and well-being was undertaken. It entailed searching electronic databases (principally Medline, the Social Sciences Citation Index and PsychInfo) using search terms such as 'job insecurity', 'downsizing' and 'organisational restructuring'. Manual searches of journals in medicine and health-related disciplines (such as nursing and occupational hygiene), organisational studies, management and industrial relations were also conducted. The sources cited within the studies identified were also checked for potentially relevant data. While almost all the studies were published in journals, some original empirical research published in book chapters or monographs was also included (a brief content summary for each study is presented in Appendix 1).

Sixty-eight studies published between 1966 and 2001 were deemed suitable for inclusion. To avoid double counting, if several publications were derived from the same or overlapping data sets they were only included as separate entries if each publication presented distinctly different, and previously unpublished, findings or analysis. The studies selected emanated from 12 countries. The largest numbers were undertaken in the USA (27 studies), followed by the United Kingdom (14), Sweden (8), Finland (5), Canada (4), Australia (2), Denmark (2), Germany (2), Norway (2), South Africa (2), China (1) and Poland (1). While most were confined to a single country, two studies spanned two countries and consequently the total number of countries from which data were collected was 70 rather than 68.

The studies were conducted across a wide range of industry sectors and several were based on general population samples. In all, thirteen used general population samples or were conducted in unspecified industries. The remaining studies were conducted within a single industry, and often within in a single workplace (see Appendix 1 for details). Those industries best represented were manufacturing (17 studies), the public sector (14) and healthcare (12). Smaller numbers of studies were conducted in transport (4), post and telecommunications (3), retailing (2), mining and energy (2), media (1) and financial services (1). Several important industry sectors were under-represented, including transport, construction, mining, hospitality and professional services. At the same time, the better-represented sectors (manufacturing, healthcare and the public sector) employ large numbers of

workers and have been conspicuous targets for downsizing, restructuring and other organisational practices affecting job security. The studies using large, representative population samples provide a valuable control against potential biases in single-sector studies. Significantly, however, the analysis to follow demonstrates substantial agreement across the range of studies, irrespective of sampling differences.

The 68 studies used a range of research methods. Forty employed longitudinal designs (three of which were quasi-experimental), 22 used cross-sectional surveys, nine relied on analysis of archival data (such as recorded injury or absence statistics) and one was a qualitative case study. The total number of studies across the four categories exceeds 68 because several (for example, Pepper, 2000) used multiple methods. The strong tendency to use longitudinal designs to trace the effects of downsizing or organisational restructuring is commendable, as they are most likely to clarify issues of cause and effect. Application of multiple methods within studies, and the range of methodologies used across studies, served to minimise the risk of methodological bias. Ultimately, however, the choice of method appears to have had no discernible effect on the pattern of findings.

Similarly, the studies used a wide range of OHS indices. Fifty-one studies used subjective health indices (such as self-reports of injury or psychological well-being). Eighteen used objective health measures (such as blood pressure, cardiovascular disease, medical referrals or injury rates) and another twelve used sickness absence records. As almost all sickness absence studies were based on medically certified absence, they could have been included within the objective measures category, but they were examined separately because of the particular reporting effects associated with absence records (discussed below). One study measured job characteristics and another examined the effects of job displacement on OHS knowledge and compliance. The total number of studies across the categories again exceeds 68 because several used multiple indices, often a combination of objective and subjective health measures. Comparing studies according to the OHS indices used provided another mechanism for detecting methodological biases but, once again, the results proved to be remarkably consistent.

In view of the different methodologies and measures used, a meta-analysis was neither feasible nor appropriate. Rather, a narrative review was undertaken (for a rationale for this selection see Van der Doef and Maes, 1999). Each study was evaluated to see if the findings indicated that job insecurity (measured directly or as part of an assessment of organisational

downsizing or restructuring) had a discernible effect on the OHS indices measured. In other words, we tested the broad hypothesis 'is job insecurity associated with a measurable deterioration in OHS outcomes?' If a study lacked a control group or benchmark against which to verify deterioration, the finding was recorded as indeterminate.

Interpretations of the Evidence

The 68 studies included in this review constitute a sizeable body of research from which to draw conclusions about the health effects of job insecurity. Furthermore, the overall findings were highly consistent. Of the 68 studies examined, 60 (88 per cent) indicated that job insecurity was associated with measurably worse OHS outcomes. Of the remainder, three studies were indeterminate (in two the findings were ambiguous and the other had no baseline or control group) and five found downsizing or job insecurity had either no effect or led to an improvement in OHS (see Appendix 1). These results make it clear that even a ruthless culling to remove methodologically inferior studies or to restrict attention to a single paper from each data set (irrespective of the originality of the analysis) would not materially effect the overall conclusions.

There is no evidence that the choice of research methods (for example cross-sectional surveys versus longitudinal designs) or OHS indices (for example subjective versus objective health measures) systematically affected findings. However, methodological considerations are still important when interpreting individual studies. Large, longitudinal studies over prolonged periods using multiple OHS indices have obvious advantages over small studies conducted in a single workplace that rely on a single survey or surveys taken at close intervals. An excellent example of the former is the Whitehall II study of a large sample of civil servants undertaken by Ferrie and her colleagues (see Ferrie et al. 1995, 1998, 1998a, 2001) in the UK. This study has charted changes since the mid 1980s, looking at the effects within particular agencies and sub-samples (by occupation, age and gender) and measuring the effects of both anticipated and actual job loss using an array of self-report and objective health indices.

Many studies treat restructuring or downsizing as a single incident whereas some longitudinal studies, such as that by Isaksson et al. (2000), demonstrate that organisations frequently engage in repeated waves of downsizing over time, which may have significantly different health consequences from those detected in single-incident studies. The problem of treating an episode of downsizing in isolation is compounded where studies focus on moderating variables (such as social support) and do not ade-

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quately recognise the magnitude of adverse health effects across the whole sample. At the other extreme, it should be recognised that downsizing can be associated with long term restructuring of an industry where the health effects may be more complex. A recent study by Ostry et al. (2000) examined changes between 1965 and 1997 in psychosocial work conditions across a range of jobs in the sawmilling industry of British Columbia. During this period restructuring, sparked largely by a recession in the early 1980s, eliminated approximately 60 per cent of the workforce and 25 per cent of job titles. The authors found a reduction in psychosocial and physical job demands and an increase in control. While health improvements might be expected to flow from these changes the authors cautioned (p. 276) that the increase in control was greater for managerial than unskilled jobs and this increased disparity might have important health implications. Unfortunately, it is difficult to interpret these results confidently due to uncertainties about the validity of the retrospective job title analysis used to determine changes and the potential confounding arising from industry and organisational restructuring, technological change and other developments during the study period.

Another methodological issue concerns the use of sickness absence to measure the health effects of downsizing (see, for example, Vahtera et al., 1997). It has been argued elsewhere (Quinlan, et al. 2001) that there may be significant reporting effects on absence records. Some workers, especially those with heavy financial and family commitments, may fear that taking sick leave will jeopardise their prospects of retaining their jobs while workers whose fate has already been decided may be less concerned about taking time off. Other pressures to remain at work while sick may also contribute to under-reporting. Several studies have noted that attendance pressure (see Simpson, 2000) is associated with anxiety, long hours and 'sickness presenteeism' (working while ill). A survey of 3,801 workers in Sweden by Aronsson et al. (2000) found that presenteeism was highest amongst workers in the healthcare, welfare and education sectors (including nurses, midwives, nursing-home aides and teachers). These sectors had all experienced substantial staffing cutbacks during the 1990s. The risk of presenteeism was highest amongst workers who were required to catch up on work that accumulated during periods of absence. It is therefore plausible that, in addition to creating fear of job loss, downsizing may promote presenteeism by intensifying the work demands on individuals and groups, reducing the staff available to fill gaps and increasing pressure for workers who take leave to later complete tasks left unattended during their absence. This issue requires further investigation. In general, however, the effects

described here are likely to diminish reporting and thereby reduce the apparent health impact of downsizing in studies based on absence records. As a consequence, the results of such studies may be considered conservative.

Most studies of downsizing and job insecurity relied on self-reporting of health and psychological distress, objective health indicators (such as blood pressure and cardiovascular disease) or sickness absence. Relatively few studies have sought to investigate effects on injury rates or occupational violence. These effects are intuitively plausible, however, especially where staff cuts are associated with work intensification and other changes that increase stress, reduce communication or create disorganisation. Indeed, some effects of this nature have been detected in several studies. For example, Snyder (1994) found a four-fold increase in the number of patient assaults on hospital staff when overall staffing levels halved in the Baltimore region between 1980 and 1989. A critical factor appears to have been the closure of specialist wards and movement of more difficult patients into general wards.

Downsizing and associated forms of restructuring can lead to the loss of older and more experienced workers, who often play a critical role in maintaining informal safety rules, and to subtle but significant changes in work practices. The latter may include the undermining of OHS management structures and activities (such as OHS units, joint workplace committees and OHS training) as workers and managers focus on tasks seen to be more relevant to organisational 'survival'. Other potential problems include increased exposure to hazardous substances or other risks, due to longer hours or 'corner-cutting', and a mismatching of skills and responsibilities when workers are required to undertake a broader array of tasks without adequate retraining. Downsizing may also affect OHS knowledge and compliance behaviour. Unfortunately, there have been few systematic assessments of these effects.

The consistency of findings across several countries indicates that country-specific biases cannot be used to explain away the findings. It is interesting to note the large number of studies conducted in the USA, given the frequency with which that country is promoted as a model for labour market flexibility and economic efficiency by neo-liberal economists, media commentators and policy-makers. The evidence from the USA shows that job insecurity arising from this flexibility has exacted a significant price in terms of diminished health and well-being amongst those workers affected.

These findings concerning job insecurity and occupational ill health should be considered in the context of other research into the OHS implications of precarious work. An earlier review of published research (Quinlan et al., 2001) revealed that 23 of 29 studies of outsourcing and home-based work identified negative OHS outcomes and the remaining six were indeterminate (due to the absence of a baseline or control group). Similarly, 14 of 24 studies of temporary and leased workers identified negative OHS outcomes, two found no effect or a positive association, and eight were indeterminate. Six of 14 studies into small business found that small businesses had worse OHS outcomes and eight were indeterminate. The review identified only six studies of part-time workers, too few to draw meaningful conclusions. Overall, it is clear that there is a powerful body of evidence that precarious employment has adverse effects on OHS.

The present findings in relation to downsizing and job insecurity reinforce the conclusions from the wider review. As already noted, studies of temporary, short-term contract or casual work were not considered here, even though they may be regarded as insecure forms of employment. Nonetheless, the evidence above indicates inclusion of research concerning the OHS of temporary workers would have simply added weight to the findings reached here. Other researchers have reached similar conclusions about the health effects of so-called 'flexible' working arrangements (see for example Benach et al., 2000).

A clear implication from this research is that job insecurity is often associated with significant adverse OHS outcomes. Since job insecurity affects a large and growing proportion of the workforce this represents a major, but largely hidden, cost to the community. It is sometimes suggested by advocates of flexible employment that these arrangements result in more people being employed and that having a job, even if an inferior one, is better than being unemployed. Indeed, in the USA opponents of more stringent OHS legislation have sometimes used this argument to bolster their case, arguing for the positive health effects of simply having a job. Seldom, if ever, have such debates considered the adverse health effects of insecure or poor quality jobs. However, as this review demonstrates, insecurity also has negative effects on worker health, safety and well-being. Even if the negative effects of unemployment are more severe – and this has yet to be thoroughly demonstrated – policy makers need to recognise a more complex set of tradeoffs. This is especially true in the light of growing evidence that casual and other insecure employment is relatively unlikely to lead to more secure and desirable jobs, even in the longer term (Burgess and de Ruyter, 2000).

While many studies of downsizing and job insecurity have focused on relatively short-term effects, several point to long terms effects. Consequently, as in the case of unemployment, it cannot be presumed that the health effects of job insecurity are transitory and rapidly reversed when more secure employment is obtained. To date, policy debates over labour market flexibility have given scant recognition to the OHS consequences of precarious employment. The evidence presented in this review indicates that, along with its other social costs, the health effects of job insecurity are extensive and warrant serious policy responses. Insecurity represents a significant externality linked to current labour market policies and practices.

Conclusions

The adverse health effects of unemployment, first demonstrated in the 1930s, have been confirmed by contemporary research. They represent a profound, though largely hidden, cost to the community. Now a growing body of research indicates that job insecurity also has serious implications for health and well-being. Of 68 studies identified in this review, 88 per cent found insecurity had a measurable adverse effect on at least one OHS index. Such an overwhelmingly consistent set of results is unusual in a substantial body of scientific research. The large sample sizes and robust methodology used in several studies make the findings all the more compelling. It is abundantly clear that the OHS impact of job insecurity, which is now a pervasive characteristic of the labour market in Australia and elsewhere, warrants attention from policy-makers similar to that demanded by unemployment.

Policies based on the simple assumption that more flexible working arrangements will reduce unemployment and generate a net benefit to the community are very narrowly conceived and seriously flawed (see Watts and Mitchell, 2000). A much wider range of social and economic costs must be considered, of which the array of health effects produced by job insecurity is just one set. It is also important to recognise that the variables associated with job insecurity do not have simple, independent effects. Instead, they form complex interactions, of which there are many examples. As noted above, health has a selection effect, in that workers with health problems are more likely to be laid off and to have greater difficulty finding new employment (Mastekaasa, 1996). Successive periods of unemployment are likely to compound this effect. There are also likely to be hidden effects of increased volatility in the labour market because a substantial

proportion of the workforce will only be able to aspire to a succession of casual and temporary jobs. There is evidence that workers who are re-employed after losing better quality jobs are likely to experience downward occupational mobility and greater job insecurity (see for example Claussen et al., 1993). Clearly, the long-term health effects of losing an apparently secure job, enduring a brief period of unemployment and being re-employed into a secure job are likely to be very different from those of either long-term unemployment or short cycles of insecure employment interspersed with bouts of unemployment.

Compelling evidence of the adverse health effects of job insecurity may surprise many, especially advocates of greater labour market flexibility. It should not. While most of the studies reviewed here were undertaken over the last decade, similar evidence was available much earlier (see, for example, Brenner 1979; Catalano and Dooley, 1979; Kasl and Cobb, 1979; Nelson, 1957; Owens, 1966). In fact, had policy-makers and key interest groups not operated in a historical vacuum, they may have drawn lessons regarding the health impact of insecure jobs from numerous government inquiries in Australia, the USA and elsewhere during the late 19th and early 20th centuries (Quinlan et al., 2001a). There is an urgent need to redress this situation by recognising and responding to the serious OHS consequences of job insecurity.

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Appendix 1. Published Research on the Association between Job Insecurity and Occupational Health and Safety

Author, year and location of study	Precarious employment category identified or study focus	Method	OHS Indices used	Findings of negative association between OHS & precarious employment	Remarks
Amick, Kawachi and others (1998) USA	Organisational restructuring /job insecurity (healthcare)	Cross-sectional survey 1992 (n=33689)	Karasek job strain & MOS SF 36 health status questionnaires	Yes, job insecurity linked to lower health status	Found job security was protective on various indices of physical & mental health
Arntez et al (1991) Sweden	Job insecurity (blue collar men & women)	Prospective longitudinal (n=354)	Psychological well-being, cardiovascular & physiological risk factors	Yes, anticipated & early unemployment negative effect on physiological risk & psychological well-being	Most changes short term except cardiovascular risk factors (observed at least 2yrs after job loss)
Aronsson & Goranson (1999) Sweden	Workers in non-preferred jobs (labour market insecurity)	Survey comparing short and long term contract workers (n=1,564)	Health indices (fatigue, headaches & depression)	Yes	Found 28% of permanent workers in non-preferred occupation
Barling and Kelloway (1996) South Africa	Downsizing/Job insecurity (gold mining)	Surveyed 187 black miners (questionnaire & blood pressure measured)	Self-reported mood & psychosomatic health plus blood pressure	Yes, job insecurity linked to increased blood pressure & turnover intentions but high workplace control moderate	Note finding of workplace control effect consistent with Karasek model
Beale & Nethercott (1985) UK	Factory closure/job insecurity (manufacturing)	Longitudinal controlled study of family of workers (80 men & 49 women) made redundant by closure	Morbidity based on healthcare centre consultation & referrals to & attendance at hospital outpatient departments	Yes, decline in health for both workers & their families. Effects began two years before closure when management intimated it	Older workers able to take early retirement excluded. Significant unexpected finding – job threat stress at least equal to actual job loss
Beale & Nethercott (1988) UK	Downsizing threat/job insecurity (manufacturing)	Longitudinal controlled study of mass redundancy & eventual closure of factory	Absence/sick leave records	Yes, workers fearing job loss reported more illness & took longer absence, especially men & infrequent GP contact	Note: absence rate dropped for younger workers (ie below 40). Argue this due to greater fear of job loss

Borg, Kristensen & Burr (2000) Denmark	Job insecurity	Longitudinal prospective 5yr controlled study (1990 n=5828, 1995 n=5001)	Self-reported health (SRH) problems/rating	Yes, found high job insecurity one of 5 work factors significantly associated with worse SRH	Robust study based on large and representative sample of adult Danish population
Boyd & Bain (1998) UK/USA	Organisational restructuring in airline industry	Qualitative case study based on aircrew survey, interviews & documents	Self-reported health problems	Yes, cluster symptoms (head aches etc) fatigue linked to few breaks/shift scheduling	Deregulation led to cost-cutting eg changes to air quality, staffing & outsourcing
Burke & Greenglass (1999) Canada	Organisational restructuring/ Downsizing (nurses)	Survey of 686 hospital-based nurses	Work/non work conflict	Yes, nurses reported significantly more work/family conflict	Restructuring variables predicted work/family not family/work conflict
Bussing (1999) Germany	Anticipated job loss/job insecurity (steel industry)	Cross-sectional comparison of matched secure (n=75) & insecure workers (n=48) in two firms	Job satisfaction, irritation, strain & psychosomatic complaints	No, significant effect of job insecurity on job satisfaction but not on health	Moderating effects of social support and job control. Workers aware of imminent job losses but not which individuals would lose job
Catalano, Rook & Dooley (1986) USA	Job insecurity	Longitudinal 4 year study (n=3,850)	Consideration & likelihood of seeking help for psychological problems	Yes, results suggest job insecurity increase likelihood of getting or considering help	
Catalano & Serxner (1992) USA	Job insecurity	Quasi experimental interrupted time series Low birth weight data California, 1974-79	Child birth weight Legislative change effect on perceived job security	Yes, effect gender specific (two groups of males had elevated risk of low birth weight)	Looked at Spanish and non Spanish birth names
Dekker and Schaufeli (1995) Australia	Downsizing/Job insecurity (public sector/rail transport)	Longitudinal controlled study of state rail organisation 1990/91 (n1=105 & n2 = 95)	Self-reported psychological health/distress	Yes, job insecurity led to psychological stress symptoms (less for 'axe fell' group than where uncertainty continued)	No evidence colleague, management & union support reduced impact. Study used only short time frame (2 months)
Dooley, Rook & Catalano (1987) USA	Job insecurity	Repeated surveys (16) of at least 500 1978-1982 (total n=8376), Used 3 methods to analyse data	Self-reported psychological health symptoms (using PERI scales)	Yes, symptoms higher for perceived job insecurity. Found social support moderators weak/absent	Interviews in English & Spanish. Used objective & subjective measures of job security. Age & sex main moderators

Fenwick & Tausig (1994) USA	Job insecurity (as part of broader study of macroeconomic factors on OHS)	Longitudinal national probability survey 1973 & 1977 (n=830)	Self-reported stress measure	Yes, link high industry unemployment rates to job demands, reduced decision latitude & higher stress	Measured effects longitudinal & cross sectional. Data old but robust methodology
Ferrie, Shipley, Marmot, Stansfeld & Smith (1995) UK	Organisational change/privatization/ job insecurity (government workers)	Longitudinal controlled cohort study (compared 660 against rest of cohort)	Self-reported health & health-related behaviour	Yes, job insecurity had no significant effect on health behaviour but negative effects on health status	Results- anticipation of job loss effects health before change in job status. Part of Whitehall II study series
Ferrie, Shipley, Marmot, Stansfeld & Smith (1998) UK	Organisational change/ job transfer/insecurity (government workers)	Longitudinal 5 year case controlled study using questionnaire & clinical exam (n=7149)	Self-reported physical symptoms & GHQ, health behaviour, BP chronic illness & sleep disruption	Yes, men transferred or anticipating insecurity have higher GHQ, poorer overall health, illness, adverse sleep & blood pressure	Note: women in both exposed groups report small increases on morbidity & most clinical measures
Ferrie, Shipley, Marmot, Stansfeld & Smith (1998a) UK	Organisational change/ job insecurity (government workers)	Longitudinal 5 year controlled cohort study (500 in dept under threat with rest, n=10,308)	Self-reported physical symptoms & GHQ, health behaviour	Yes, men & women got increase in body mass, sleep > 9hrs, small increase in ischema & blood cholesterol. Women increase in BP	Robust study is part of Whitehall II series
Ferrie, Shipley, Marmot, Martikainen, Stansfeld & Davey Smith (2001) UK	Organisational change/privatization/ job insecurity (government workers)	Longitudinal controlled cohort study (Whitehall II) 1985-88,1989-90 & 1992-93. Study 1 – Executive Agencies & Study 2 – PSA	Self-reported physical symptoms & GHQ, health behaviour, BMI and blood pressure.	Yes, threats to job security had modest adversely effects health outcomes (GHQ&BMI). Chronic job insecurity link to increase blood pressure	No significant effects on health behaviour like alcohol use
Flannery et al (1997) USA	Downsizing (health care)	Longitudinal study of state hospital downsizing/ closure in 22 month period	Occupational violence/staff assault by patients	No, assault frequency declined by 63%	Differences to Snyder partly explained by pattern of ward closure/patient load, over-crowding & assault program
Grunberg, Moore & Greenberg (2001) USA	Downsizing/job insecurity (manufacturing)	Longitudinal panel study using company records, interviews/focus groups & questionnaire (n=2,279)	Self-reported work injuries & illness; poor health index, alcohol problems, depression & health behaviour change	Yes, contact with layoff linked to more symptoms of poor health, depression. Being laid-off & re-hired link to more injuries, illness & absence	First findings of large panel study. Points to effects on job security of repeated layoffs in cyclical industries

Hamilton, Broman, Hoffman & Renner (1990) USA	Plant closures/ job insecurity (automobile manufacturing)	Quasi experimental design (4 closing plants n=831 & 12 non-closing n=766)	Mental health symptoms from Hopkins Symptom checklist	Yes but partial & varied according to demographic variables (black & white)	Unemployment had clear adverse effects on health. Anticipated job loss effects more subtle
Harenstam et al (1999) Sweden	Organisational restructuring/changes to types of work organisation	Analysis of 72 public & private organisations and longitudinal study of 104 men & 104 women	Psychosocial working conditions (work load, job insecurity, control, pay/effort relationship etc)	Lean production had greatest impact on psychosocial conditions, especially women	Study also used Stockholm Public Health Questionnaire but findings not reported here
Heaney, Israel & House (1994) USA	Job insecurity (automobile industry)	Longitudinal survey (n=207), 1986-7	Physical symptoms	Yes, job insecurity increased physical symptoms	Job insecurity a chronic stressor, increased effect with long exposure
Isaksson, Hellgren & Pettersson (1999) Sweden	Downsizing (repeated)/ organisational restructuring (retail)	Longitudinal. Two surveys (T1n=555 & T2n=395) of 'surviving' employees in retailing company	Distress (GHQ symptoms) and health complaints	Yes, job insecurity most significant explanation of distress for T1 & T2. Older most vulnerable/negative symptoms remain	Study of repeated downsizing highlights potential limits of one-off studies re avoiding negative health effects
Iversen & Sabroe (1988) Denmark	Downsizing/job insecurity (shipbuilding)	Longitudinal 3 year study-shipyard closure (n=1153/control n=441)	Psychology well-being (GHQ)	Yes, employed fearing unemployment had reduced psychological well-being	Study stressed health effects of both unemployment & job insecurity
Iwi, Watson, Barber, Kimber & Sharman (1998) UK	Outsourcing/ downsizing/ privatization via competitive tendering (local government)	Survey of divisional workforce (n=193)	Psychological Morbidity (GHQ) and occupational stress	Yes, higher OSI & GHQ scores than comparable workers not facing privatization	Some moderating effects for workers getting counselling but still worse than general population
Jenkins,McDonaldMurray & Strathdee (1982) UK	Anticipated redundancy/ job insecurity (newspaper)	Prospective 6 month longitudinal study (n1=162, n2&3=111)	Psychological well-being (GHQ-30 item), alcohol & job satisfaction	Yes, significantly reduced symptoms after redundancy notices withdrawn	Newspaper subject of prolonged industrial dispute prior to study.
Kasl & Cobb (1979) USA	Anticipated redundancy/job insecurity/ unemployment & re-employment (manufacturing)	Controlled longitudinal (interrupted time series) from pre-redundancy to 24 months post termination (n=174)	Physiological, health, psychosocial & job characteristics indices	Yes, in mental health, but limited magnitude & duration	Authors note significant sampling and contextual factors may have mitigated effects

Kivimaki, Vahtera, Koskenvuo, Uutela & Pentti (1998) Finland	Downsizing/ job insecurity (public sector – local government)	Longitudinal 5 year study analysed certified sickness absence & also surveyed hostility (n=866)	Sickness absence, psychosocial stressors & hostility	Yes, stressor exposure increased absence. Men trauma stressor for hostility increase. Women stressors include downsizing	Results controlled for baseline levels of sickness absence. Found vulnerability through hostility more evident in women
Kivimaki, Vahtera, Pentti & Ferrie (2000) Finland	Downsizing (local government)	Longitudinal 5 year cohort study using survey (n=764) & absence records	Self reported health-related behaviour & medically certified absence records	Yes, sickness absence rate 2.17 times higher after major downsizing than minor downsizing	Outcomes moderated by effects on physical demands, job control & security.
Kivimaki, Vahtera, Thomson, Griffith, Cox & Pentti (1997) Finland	Downsizing/ organisational restructuring (local government)	Longitudinal (5 year) study using certified sickness absence and survey (n=763)	Sickness absence & self-reported	Work characteristics predicted sickness absence	Study controlled for prior absence, lifestyle & demographic differences
Kuhnert & Palmer (1991) USA	Job insecurity (clerical/public sector)	Surveyed workers at personnel office of state agency (n=104/56 male & 48 female)	Self-reported health & psychological well-being using SCL-90-R	Yes, job security strong predictor of health (more intrinsic & extrinsic rewards). Those define themselves most by job more symptoms	Gender not significant predictor-job security. Study undertaken in secure context where no mooted layoffs etc
Kuhnert, Sims & Lahey (1989) USA	Job Insecurity (Manufacturing)	Surveyed workers at 2 organisations (n=201)	Self-reported health & psychological well-being using SCL-90-R	Yes, decreased job security related to greater symptoms of ill-health	Both organisations relatively secure. Stronger relationship in more stressful plants?
Landsbergis (1988) USA	Job insecurity (hospital/healthcare)	Surveyed workers in New Jersey (n=289)	Self-reported CHD symptoms, depression & burnout	Yes, job insecurity associated w strain & burnout	Evidence supporting positive union role. Argued add job security to Karasek model
Layton (1987) UK	Job insecurity (unspecified)	Prospective longitudinal survey of male workers in 4 firms (n=101)	State anxiety	Yes, anxiety levels of men facing job loss same as when later lost job. Anxiety drops if re-employed	Anxiety levels of both groups the same when anticipating job loss/redundancy
Mattiasson, Lindegarde, Nilsson & Theorell (1990) Sweden	Job insecurity (industrial shipyard workers)	Longitudinal controlled (n=715 & control group n=261) followed up over mean of 6.2 years	Cardiovascular risk factors & sleep quality	Yes, elevated lipids, sleep disturbance, depression & anxiety in response to threat of unemployment	Methodologically strong study using multiple measures

McHugh (1998) Sweden	Organisational restructuring/ rationalization (public sector)	Survey of a social insurance organisation workers (n=246)	Self-report anxiety & symptoms of being worn out	Yes, rationalisation process linked to anxiety and symptoms of being worn out	Argued public sector organisations needed to take account of effects when planning change
Mikkelson & Saksvik (1999) Norway	Organisational restructuring (postal service)	Quasi experimental longitudinal study. Analysed participatory intervention in two post offices (Study 1 n=62 & Study 2 n=91)	Work conditions and subjective health, anxiety & job stress	Yes? Restructuring/ & downsizing & turbulence caused work conditions to deteriorate in control groups & only reduced in 1 intervention group	Indirect evidence, precarious employment not focus of this small sample study
Most (1999) USA	Telecall centre workers & job insecurity (retailing)	Survey of two telecall centres in company 1997(n=689) Compared to 1991 survey	Musculoskeletal pain & disorders (especially CTD) & reporting pain	Yes? Most important reason for not reporting pain was fear of restricted work/job loss	No comparison between telecall centre workers & others doing same job
Orpen (1993) South Africa	Job insecurity (manufacturing)	Survey of 54 secure white workers & 78 insecure black workers in single plant	Psychological well-being (anxiety and depression)	Yes, job insecurity related to anxiety & depression within both groups	Effects within both groups despite difference in level of insecurity between groups. Small sample confounded by organisational level & race
Ostry et al (2000) Canada	Downsizing/long term restructuring (manufacturing)	Experts independently rated jobs re psychosocial conditions for years 1965 & 1997	Psychosocial conditions (control, psychological & physiological demands)	Unclear, control increased & lower psychological & physiological demands but increased disparity of control in job hierarchy	Study raises important conceptual & methodological issues. Difficult to interpret results due to retrospective subjective assessments.
Owens (1966) UK	Threatened redundancy/job insecurity (railway workshops/transport)	Examined sick absence records for closing workshop (n=668) & control (n=475)	Sickness absence data	Yes, sick leave more frequent & longer duration amongst men threatened with redundancy	Service length effect – stable group absence highest among those with several years service. Little disparity for threatened group
Park and Butler (2001) USA	Downsizing	Survey of Minnesota firms (n=121) matched with 5,125 comp claims covering years 1990-98	Compensation claims duration and frequency	Yes, recent downsizing increased claim duration but not frequency	
Parker et al 1997 UK	Downsizing (manufacturing)	Longitudinal survey of single plant (n=139)	Well-being (anxiety/ depression)	No, increased work demands offset by improved work characteristics	

Pepper (2000) USA	Downsizing/job insecurity (nuclear energy)	Questionnaire surveys of workers at 5 plants (n=5850) plus injury, absence records; focus groups & interviews	Sickness absence, injury, psychological well-being, physical health, job characteristics,	Yes, those with most direct experience of downsizing poorer mental health & (in 4 sites) more medical symptoms	Large multi-method study. Notes mitigating effects. At two sites workers exposed to harassment more mental health or medical symptoms
Petterson & Arnetz (1998) Sweden	Downsizing (health care)	Prospective study of structured interventions in large regional hospital (1994-95)	Self-reported health & well-being	Yes, worsening in most measures. 'Attenuated' where active employee & organisational interventions	Worsening 'most likely due to a notice of 20% staff reduction prior to follow up assessment'
Probst (2000) USA	Organisational restructuring /job insecurity (public sector)	Survey (n=283) of public sector workers experiencing reorganisation	Self-reported health problems, job attitudes & psychological distress	Yes, involved workers reported more health problems, distress & negative attitudes to job insecurity	
Reissman et al (1999) USA	Downsizing (manufacturing)	Survey of workforce at single plant (n=92)	Self-reported job stress	Cross sectional and no benchmark	Like Vahtera et al & Szubert et al found effects highest on older workers, educated with longer job tenure
Rosenman et al (2000) USA	Job insecurity	Survey (n=1598) using standardised questionnaire by phone	Workers' compensation claims for musculoskeletal injury	Yes, only 25% filed claims but shorter employment even less likely	
Saksvik (1996) Norway	Organisational restructuring (telecommunications industry)	Two surveys of workers in single organisation (n=401 for both)	Self-reported work conditions, attendance pressure & sick absenteeism	Yes, working conditions worsen, pressure not to report & those absent vulnerable	Short period study (1 year) limits findings but points to limits of simple absence measures
Schnall et al (1992) USA	Downsizing/Job insecurity (financial services/stock brokerage)	Longitudinal screened sample 1986,1989,1990 (n1=870 & n2=369[139 still w firm/230 not]) plus questionnaire	Blood pressure & psychological distress	Yes (partial) significant increased psychological distress but no long term consistent change in blood pressure	Note clerical group had significant increased blood pressure (high work- load/low control) link to Karasek model
Schweiger & DeNisi (1991) USA	Merger/organisational restructuring (light manufacturing)	Longitudinal controlled field study of two plants (surveyed employees at experimental & control plants at 3 points)	Stress, absenteeism, commitment, trust, job satisfaction	Yes, increased stress, absenteeism, uncertainty & decreased job satisfaction, honesty trust, & caring ratings	'Realistic' merger preview moderated negative effects

Shannon, et al (2001) Canada	Organisational restructuring/ downsizing/job insecurity (healthcare)	*Longitudinal study* (surveys – 1995, 1996 & 1997 & n=712) of large hospital workforce	Self-reported work conditions, psychological well-being & back & neck pain	Yes, *significant decline* in general health & significant increase in neck & back pain over time of change	Large female sample (not just nurses) & study considered spillover demands of work & non work family roles
Sheehan et al (1998) Australia	Organisational restructuring (public & private sector)	Survey (n=373) plus 62 detailed interviews	Managerial style/ bullying/ occupational violence	Yes, increase in coercive behaviour, bullying & work intensification	Most respondents white collar. Methodological issues/best seen as pilot study
Shogren et al (1996) USA	Downsizing (healthcare/nurses)	OSHA recordable injuries 1990, 1992 & 1994 (94 of 97 employers, Minnesota	Number of injuries in comparison to workforce trends	Yes, 61.8% injury increase in 1990-2 when workforce by 12%	In 1992-4 workforce increased but overall (ie 1990-4) fell by 10.2% & injuries up 65.2%
Siegrist (1996) Germany/China	Job insecurity/ extended working hours (Industrial/ manufacturing)	Five year prospective/ longitudinal study with multiple samples (n China=1100 & n Germany=4,000). Also cross sectional	Cardiovascular risk factors and events (miocardial infarction, death, strokes, blood pressure & CHD). Good mix of clinical & survey measures	Yes, job insecurity & work pressure predicted clusters of coronary events, CHD or stroke. Extended hours/job cuts & insecurity linked to high BP & serum cholesterol	Well controlled study (age, smoking, BP etc) Findings interesting as compares developed & developing country. Also found heart rate & BP linked to worsening job conditions
Simpson (2000) UK	Downsizing/job insecurity & long hours	Questionnaire survey of managers (n=220) plus follow-up interviews (n=25)	Impact of restructuring on workloads, hours & personal lives (ie work/non work conflict)	Yes, restructuring led to longer hours due to increased workload & also insecurity/fear	Restructuring led to presenteeism with adverse effect on home life especially women
Snyder (1994) USA	Downsizing (hospitals)	Hospital census of assaults in Baltimore area 1980-9	Occupational violence/patient assaults on staff	Yes, four-fold increase in assaults as hospital census halved	Findings not confirmed by later Flannery et al study but latter identify reasons for this
Stansfeld, Head & Ferrie (1999) UK	Organisational restructuring/job insecurity (public sector)	Longitudinal case control study (n=3,772 men & 1,497 female civil servants)	Sickness absence frequency rates	No/unclear Short term absence decreased & long term absence stable	Whitehall II study-large data set & robust methodology
Stechmiller and Yarandi (1993) USA	Job insecurity (female healthcare workers)	Cross-sectional survey (n=300)	Emotional exhaustion & job stress	Yes, job security had modest effect on emotional exhaustion & stress	Found pay inversely related to job stress but authors didn't relate this to job insecurity

Szubert et al (1997) Poland	Downsizing (manufacturing)	Health records at industrial plant 1989-94 (n=8,588)	Sickness absenteeism	Yes, 20% increase in absenteeism over downsizing period	Like Vahtera study (below) found main absence cause was musculoskeletal
Vahtera et al (1998) Finland	Downsizing (local government)	Employer health records of workers 1991-5 (n=981)	Sickness absence	Yes, significant association between downsizing & sick leave (long term)	Found effects long term absence & most pronounced for older workers
Vahtera, Kivimaki, Uutela & Pentti (2000) Finland	Downsizing (local government)	Employer health records of male & female workers (2 cohorts 1991-3 n=757 & 1993-7 n=803)	Compared sickness absence exceeding 3 days of high & low hostility employees	Yes, found workers with high hostility more vulnerable to the negative effects of downsizing	No significant gender effect identified
Wade, Cooley & Savicki (1986) USA	Job insecurity (health sector/human services helping professionals)	Longitudinal (1 year) follow up questionnaire (n=46)	Self-reported stress and burnout (assessed using Maslach Burnout Inventory)	Yes, higher economic stress (loss of job security) reported higher level of stress	Small sample and short observation period
Wahlstead & Edling (1997) Sweden	Organsiational restructuring (postal workers)	Longitudinal survey (n1=136, n3=100) 1987-8 in single organisation	Sleep disturbance, gastrointestinal complaints & absence	No, all indicators improved	Change led to significant increase in skill discretion & authority
Woodward, et al (1999, 2000) Canada	Organisational restructuring (re-engineering)/job insecurity (healthcare)	Longitudinal 2 year study (1995 n1=642 & 1997 n2=380) of large hospital	Emotional distress (depression, anxiety & emotional exhaustion)	Yes, significant increase in depression, exhaustion & anxiety. Greater perceived insecurity (1997) linked to job stress	Also noted long term effects on quality of patient care. Differences in changes to job demands for supervisors & other staff affected stress
Zeitlin (1995) USA	Downsizing (merchant marine)	Illness records-merchant marine accident database (n=11903)	Cardiovascular disease, heart attacks, suicide, hypertension, ulcers, arthritis & psychoneurosis	Yes, deckhands higher CVD, heart attacks, suicide, asthma & psychoneurosis; engine personnel asthma & heart attack	Engine personnel under most stress.