



Work and worklessness

Final report of the Task group
on employment and working
conditions, including
occupation, unemployment
and migrant workers.

Review of social determinants of health and
the health divide in the WHO European Region

Annex



Johannes Siegrist
Ellen Roskam
Stavroula Leka





**World Health
Organization**

REGIONAL OFFICE FOR **Europe**

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Annex 1. Tables 1–3

Joan Benach and Carles Muntaner prepared Tables 1 and 2 (Il Ho Kim shared important references), and Johannes Siegrist prepared Table 3

Table 1. Overview of epidemiological studies: job insecurity, downsizing and health (1990–2011) (I)

Author and year	Country	Population	Design	Sample	Independent variable
Subregi Roskies et al. (1990)	Canada	26 shipyard workers (1990)	Longitudinal study	1291 (1990)	Job insecurity
Subregi Roskies et al. (1990)	Canada	Manager in traditional industry (1990)	Cross-sectional study	1291 (1990)	Job insecurity
Heaney et al. (1994)	EEUU	Automotive industry (1986–1987)	Longitudinal study	207 employees	Job insecurity
Orpen (1994)	Australia	Industry	Cross-sectional study	129 employees	Job insecurity
Kinnunen et al. (1994)	Finland	Representative population (1990)	Cross-sectional study	3503 salary earners	Job insecurity
Dekker & Schaufeli (1995)	Australia	Australia's large public transport organization	Longitudinal study	95 employees	Job insecurity
Ferrie et al. (1995)	England	20 civil service departments (Whitehall II)	Longitudinal cohort study	5533 employees	Job insecurity
Ferrie et al. (1998a, b)	England	Administrative workers (Whitehall II)	Longitudinal cohort study	7419 white-collar civil servants	Downsizing
Ferrie et al. (1999)	England	Office employees working in civil service	Longitudinal study	8354 office employees	Job insecurity Downsizing

Outcome measure	Main results
Mental distress (GHQ)	<p>The anticipatory phase was found to be a very burdening phase of unemployment due to the prolonged uncertainty.</p> <p>Despite good economic compensation, depressive and mental reactions were noticed. The single, older unemployed men were found to be a risk group.</p>
Mental distress (GHQ)	<p>Concern about any aspect of job insecurity was associated with decreased personal well-being and deterioration of work behaviour and attitudes.</p> <p>However, only a small minority of managers were seriously worried about imminent job loss, with substantially more anxious about deterioration in working conditions and long-term security.</p>
Physical symptoms (17 somatic symptoms) Job satisfaction	<p>Chronic job insecurity predicts changes over time in both job satisfaction and physical symptoms.</p> <p>Extended periods of job insecurity decrease job satisfaction and increase physical symptoms.</p>
Mental well-being	<p>The relation between job insecurity and mental well-being is moderated by the self-esteem and the confidence in the personal control.</p>
Psychosomatic symptoms Aches and pains	<p>Job insecurity is a mental stressor with adverse effects for employees.</p> <p>Social support has a light moderating effect in alleviating the negative health effects of job insecurity.</p>
Mental distress Burnout	<p>Job insecurity is associated with a deterioration of mental health (leading to mental distress and burnout), as well as job and organizational withdrawal.</p> <p>Support from colleagues, management or unions does not have stress-buffering effects.</p>
Self-rated health Health behaviour	<p>There were no significant differences in the changes in health behaviour between cohort members moving into a period of job insecurity and the remainder of the cohort.</p> <p>Self-reported health status tended to deteriorate among employees anticipating privatization compared with that of the rest of the cohort.</p>
Self-rated health Longstanding illness Mental disorder (GHQ) Health-related behaviour	<p>Job uncertainty is likely to be related with poor self-rated morbidity, prolonged diseases, sleep disturbance, and minor mental health problems in both sexes.</p> <p>Increases were significant for body mass index (BMI), ischaemia and cholesterol concentration in both sexes.</p> <p>Among women only, job insecurity is significantly related to increase in blood pressure.</p>
Self-rated health Minor mental health problems Health-related behaviour	<p>Transfer to an executive agency involves a period of uncertainty in the United Kingdom.</p> <p>Men both already working in and anticipating transfer to an executive agency experienced significant increases in health self-rated as “average or worse”, longstanding illness, adverse sleep patterns, mean number of symptoms in the fortnight before questionnaire completion, and minor mental disorder.</p>

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (II)

Author and year	Country	Population	Design	Sample	Independent variable
McDonough (2000)	Canada	1994 Canadian national sample aged 20–64 years old	Cross-sectional study	8748 (1994)	Job insecurity
Domenighetti et al. (2000)	Swiss	General population (1997)	Cross-sectional study	2024 employees	Job insecurity
Kivimäki et al. (2000)	Finland	Municipal employees (1990–1995)	Longitudinal cohort study	764 employees	Downsizing
Kivimäki et al. (2001a)	Finland	Municipal employees (1990–1995)	Longitudinal cohort study	764 employees	Downsizing
Kivimäki et al. (2001b)	Finland	Municipal employees 1991 and 1993	Longitudinal cohort study	764: 189 men, 575 women employees	Downsizing
Cole et al. (2001)	Canada	National working population 1994	Cross-sectional survey	4230 men, 4043 women	Job insecurity
Armstrong-Stassen (2001)	Canada	Civil servants employed 1995–1997	Longitudinal study	187 of the 389 respondents, aged 45 and older	Downsizing Job insecurity
Virtanen et al. (2002)	Finland	Municipal sector employees in 8 Finnish towns in 1997–1998	Cross-sectional study	8767 employees	Job insecurity Employment status

Outcome measure	Main results
Self-rated health Distress Medications Heavy drinking	High level of job insecurity lowered self-rated health and increased distress and the use of medications, but no impact on heavy drinking.
Psychosocial stress Self-rated health Health behaviours	<p>Employees in high-insecurity group, compared with those in low-insecurity group, have significantly higher odds for seven indicators related to self-rated health and self-esteem, subjective stress and low-back pain and poor health behaviour (regular smoking, avoiding medical consultation).</p> <p>The positive dose–response gradient was found between rise in job insecurity and health indicators, suggesting a linear deterioration of health.</p>
Sickness absence	<p>Massive downsizing is attributable to disadvantageous changes in work, including skill discretion, physical demands and participation in decision-making resulting in adverse morbidity.</p> <p>Sickness absence rate from all causes was 2.17 (95% confidence interval 1.54–3.07) times higher after major downsizing than after minor downsizing.</p>
Musculoskeletal problems	Downsizing is a risk factor for severe musculoskeletal pain among those who remain in employment.
Musculoskeletal sickness absence	The odds ratios (OR) for musculoskeletal disorder and the corresponding sickness absence from major downsizing were 2.59 (95% CI 1.5–4.5) and 5.50 (95% CI 3.6–7.6), respectively.
Musculoskeletal pain Musculoskeletal activity restrictions	For both men and women, low social support at work and high job insecurity were independent predictors of restricted activity due to musculoskeletal disorders (men, OR 1.50, 95% CI 1.03–2.19; women OR 1.58, 95% CI 1.08–2.30).
Individual well-being (health-related symptoms, burnout)	<p>After 20 months from a large-scale downsizing, older layoff survivors reported a significant reduction in commitment to the organization, employee’s decision power and organizational trust and morale.</p> <p>There is no significant relationship between organizational commitment and health symptoms or burnout.</p>
Self-rated health Chronic disease Mental distress (GHQ)	<p>Compared with permanent employees, fixed-term men and women had better self-rated health and less chronic disease, but women had more mental distress (OR 1.26).</p> <p>Low perceived employment security was associated with poor health across self-rated health, mental distress, and mental health.</p> <p>The association of low perceived security with mental distress was significantly stronger among permanent employees than among fixed-term and subsidized employees.</p>

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (III)

Author and year	Country	Population	Design	Sample	Independent variable
Ferrie et al. (2002)	England	White-collar office workers in the British civil service	Longitudinal study (1985–1988)	10 308: 6895 men and 3413 women	Chronic job insecurity Changes in job security
Kivimäki et al. (2003)	Finland	Municipal employees (1990–1993)	Longitudinal study	886 employees	Downsizing
D'Souza et al. (2003)	Australia	Self-employed managers and professionals	Cross-sectional study	1188 employees	Job insecurity
Ferrie et al. (2003)	England	White collar office workers in the British Civil Service	Longitudinal study	10 308: 6895 men and 3413 women	Job insecurity Financial insecurity
Mohren et al. (2003)	Netherlands	45 companies and organizations	Cross-sectional and longitudinal study	12 140 employees	Downsizing
Borrell (2004)	Spain	National population	Cross-sectional study	2345 men 1874 women	Job insecurity
Lee et al. (2004)	United States	Women from the Nurses' Health Study, 1992–1996	Prospective cohort	36,910 nurses	Job insecurity
Swaen (2004)	Netherlands	Working population 1998–2000	Longitudinal study	574 government employees	Downsizing

Outcome measure	Main results
Self-reported health Minor mental disorder, health behaviour	Loss of job security adversely affects self-reported health and minor mental disorder, which are not completely reversed by removal of the threat and tend to increase with chronic exposure to the stressor.
Self-rated health Mental distress Musculoskeletal symptoms and pain Sickness absence	<p>The greater the downsizing, the poorer was self-rated health, higher prevalence of musculoskeletal symptoms and pains (2–3 times higher) in both sexes, and mental distress among men.</p> <p>Employees who did not find employment after the staff reductions were older employees with high pre-existing morbidity.</p> <p>Employees who get a new job elsewhere were younger and had better health already before the downsizing than the stayers.</p> <p>After the downsizing, deterioration of health was most likely in the stayers working in groups of major staff reductions and among the non-employed leavers.</p>
Depression, anxiety, physical health; self-rated health	High job insecurity was independently associated with poor self-rated health 3.72 (95% CI 1.97–7.04), depression: 3.49 (95% CI 1.90–6.41), anxiety: 3.29 (95% CI 1.71–6.33) and a twofold increase for physical health 2.19 (95% CI 1.21–3.95).
Self-reported health Longstanding illness Mental health BMI	<p>Job insecurity was strongly related to depression but not morbidity and cardiovascular risk factors.</p> <p>Job insecurity seems to explain about 5% of health status, which is self-rated health in both sexes, longstanding illness in men, BMI in women</p> <p>Financial insecurity was a significant cause of deteriorating self-rated health, depression, longstanding illness and BMI.</p>
Common infections Health complaints	<p>A cross-sectional relationship between job insecurity and common infections or health complaints was found.</p> <p>For the longitudinal relationship, the largest effects were found for flu-like illness (OR 1.39; 95% CI 1.22–1.57) and health complaints (OR 1.51; 95% CI 1.39–1.64).</p>
Poor self-rated health	Higher levels of job insecurity than lower levels of job insecurity are associated with poor reported health (adjusted OR 2.33; 95% CI 1.51–3.61).
Coronary heart disease	Job insecurity was associated with increased risk of non-fatal myocardial infarction in the short term (2-year follow-up: RR 1.89; 95% CI 1.03–3.50).
Mental distress	<p>The relative risk for becoming a mental distress case was 1.61 (95% CI 1.27–2.05) during 13 months after the closure threat of governmental agency.</p> <p>Within the closure group, a difference in relative risk for mental distress was observed between employees who self-reported an increase in job insecurity (RR, 1.85; 95% CI 1.41–2.42).</p>

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (IV)

Author and year	Country	Population	Design	Sample	Independent variable
Vahtera et al. (2004)	Finland	Municipal employees	Prospective cohort	5909 male and 16 521 female	Downsizing
Ferrie et al. (2005)	England	White-collar civil servants	Longitudinal study	10 308: 6895 men and 3413 women (73%)	Job insecurity
Cheng et al. (2005)	Taiwan, China	National population, 2001	Cross-sectional study	17 272 (82%)	Job insecurity
Cole et al. (2005)	Canada	Paid employees aged 18–64, years, 1994–1995, 2000–2001	Longitudinal study	2806 working adults	Job insecurity
Størseth (2006)	Norway	Norwegian employees	Cross-sectional design	729 employees	Job insecurity
Kopp et al. (2006)	Hungary	People residing in the 150 subregions of Hungary	Cross sectional, ecological analysis	12 643 people	Job insecurity Income, education Control in work Social support
Broom et al. (2006)	Australia	Community survey of people aged 40–44 years	Cross-sectional survey	2497 people	Perceived job insecurity Perceived ability to get another job Job strain

Outcome measure	Main results
Sickness absence Mortality	<p>Cardiovascular mortality was 2.0 (95% CI, 1.0–3.9) times higher after major downsizing than after no downsizing.</p> <p>Excess cardiovascular mortality was very pronounced in the first half of the follow up period after downsizing (adjusted HR 5.1; 95% CI 1.4–19.3).</p> <p>Major downsizing was associated with an increase in sickness absence in permanent employees, but not in temporary employees.</p>
Self-reported health, Longstanding illness Minor mental disorder	<p>Self-reported job insecurity has significantly adverse effects on both poor self-rated health and minor mental disorder.</p> <p>In general, about 60% of these associations were explained by job satisfaction, pessimism, financial insecurity, social support at work and vigilance.</p>
Self-rated health Mental health Job satisfaction	<p>Job insecurity was strongly associated with lower levels of mental health, vitality and general health, increased risks of various health complaints as well as lower level of job satisfaction.</p> <p>The deleterious effects of job insecurity appeared to be stronger in men than in women.</p> <p>Job insecurity was more common among low-educated workers, in blue collar and construction workers, those employed in smaller companies and in older female workers.</p>
Work-related repetitive strain injuries	<p>Job insecurity (OR 1.76; 95% CI, 1.07–2.91) were positively associated with work related repetitive strain injuries, whereas working less than 30 hours per week exhibited a negative association with such injuries (OR, 0.2; 95% CI, 0.1–0.7).</p>
Physical and mental health complaints Risk-taking behaviour	<p>A parsimonious model of job insecurity explained that mental health complains and employees' risk-taking behaviour were significantly predicted, but not physical health complaints (sadness, depression, anxiety, dizziness, tiredness, sleep problem, heart flushes, extra heartbeats)</p>
Cardiovascular mortality rate	<p>Job insecurity, high weekend workload and low control at work contribute most noticeably to variation in premature cardiovascular mortality rates among women, whereas high weekend workload, low social support at work and low control at work account for a large part of the variation in male premature cardiovascular mortality rates.</p>
Self-rated health Self-reported mental health (depression) Physical health; health service utilization	<p>Poor quality of jobs (job insecurity, job strain and low marketability) was associated with worse health when compared with jobs with fewer or no stressors.</p> <p>People in jobs with three or more of the job insecurity and strain report health that is no better than the unemployment.</p>

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (V)

Author and year	Country	Population	Design	Sample	Independent variable
Di Donato et al. (2007)	Italy	77 men working in a university	Cross-sectional study	84 (response rate 82%)	Job insecurity
Boya et al. (2008)	Turkey	Nurses working in 16 private hospitals in Izmir	Cross-sectional study	462 nurses	Qualitative job insecurity Quantitative job insecurity
Lau & Knardahl (2008)	Norway	Population-based Oslo Health Study: all men and women born in 1955–1970	Prospective design	5163 people in the first and second periods	Job insecurity
Bethge et al. (2008)	Germany	German workers in the Socio-economic Panel Survey in 2003–2006	A cohort study	9272 in 2003 8709 in 2004 7773 in 2006	Job insecurity Financial insecurity
Martikainen et al. (2008)	Finland	Population registration data on Finnish employees 35–64 years old (1993–2002)	Prospective cohort study	85 833 Finnish employees	Downsizing
Rugulies et al. (2008)	Denmark	Representative sample of the employees	Prospective cohort study	1918 men and 1809 women in 1995, 2000	Job insecurity Labour market chances

Outcome measure	Main results
Job strain Blood cytotoxic activity	<p>Young employees and sanitary staff with temporary employment showed higher level of job insecurity than control subjects with stable position.</p> <p>Blood cytotoxic activity was significantly lower in the old employees with job strain or in the young employees with job insecurity (but not in the sanitary staff) than in the controls.</p>
Perceived anxiety Depression	<p>Perceived anxiety (OR 2.2; 95% CI 1.2–3.9) and depression (OR 2.5; 95% CI 1.6–4.1) were significantly associated with qualitative job insecurity.</p> <p>Similarly quantitative job insecurity was associated with perceived anxiety (OR 3.4; 95% CI 1.9–6.2) and depression (OR 2.2; 95% CI 1.4–5.6)</p>
Mental distress Self-rated health Upper back pain Lower back pain	<p>Job insecurity is associated with back pain in the prospective results ($\beta = -0.09$).</p> <p>Among the personality variables, type A was able to predict an increase in upper back pain; ($\beta = 0.07$), while optimism predicted a change in low back pain ($\beta = -0.07$).</p>
Self-reported health Longstanding illness Mental health BMI	<p>After adjustment for age, sex, education and occupational status, people with high job insecurity had a higher risk of adverse self-rated health both after one year (OR 1.18; 95% CI 1.06–1.31) and three years (OR 1.18; 95% CI, 1.05–1.32).</p> <p>The analysis also identified an interaction between occupational status and job insecurity. High job insecurity proved to be a health risk, particularly for people with lower occupational status (2004: OR=1.37; 95% CI: 1.15–1.62; 2006: OR=1.31; 95% CI: 1.09–1.57).</p>
Mortality Cause-specific mortality	<p>The results provide evidence that downsizing is not a significant determinant of excess mortality among those remaining in the downsized workplaces.</p>
Self-rated health	<p>Women with job insecurity had an increased risk of a decline in health at follow-up, after adjustment for all covariates (OR 1.78, 95% CI: 1.24–2.54).</p> <p>Effect estimates were strongest among women 50 years of age or younger with poor labour market chances.</p> <p>Among men, there were no main effects for job insecurity. However, men aged 50 years or younger with poor labour market chances showed an OR of 1.64 (95% CI: 0.95–2.84) for a decline in health.</p>

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (VI)

Author and year	Country	Population	Design	Sample	Independent variable
Andrea et al. (2009)	Netherlands	Working population	Prospective cohort study	3707 employees	Psychosocial work characteristics
Bauer et al. (2009)	Switzerland	Working population	Cross-sectional study	10 101 employees: 5003 women and 5098 men	Socioeconomic status Working conditions (including job insecurity)
Boscolo (2009)	Italy	University workers	Cross-sectional study	118 men and 68 women	Anxiety Job strain Job insecurity
Burgard et al. (2009)	United States	Working population	Longitudinal study	Two nationally representative samples ($n = 1507$ and $n = 1216$) followed from 3 to 10 years	Perceived job insecurity
Cortese et al. (2009)	Italy	Health care workers	Cross-sectional study	265 healthy health care workers in seven paired wards of two hospitals	Sociodemographic characteristics
Domenighetti et al. (2009)	Switzerland	Working population	Cross-sectional study	7247 individuals aged 20–64 years	Job insecurity
Forcella et al. (2009)	Italy	Teachers	Cross-sectional study	374 teachers (300 women and 74 men) from different schools in the city of Pescara	Job strain Job insecurity (Karasek's questionnaire)

Outcome measure	Main results
Anxiety; depression (Hospital Anxiety and Depression scale)	Adverse psychosocial work characteristics are significant predictors of the onset of subclinical anxiety and depression in the general working population.
Self-rated health	Physical and psychosocial working conditions such as physical disturbances from working environment, physical strains in doing the job, monotony at work, job insecurity etc. could explain most of the social gradient of self-rated health in men and women.
Immune response (natural killer cell activity)	Analysis of all the data of the men showed that anxiety and job insecurity (more than job strain) reduce natural killer cell activity.
Self-rated health Depressive symptoms Negative affect	Persistent perceived job insecurity is a significant and substantively important predictor of poorer self-rated health in both samples and of depressive symptoms in one of them. Job losses or unemployment episodes are associated with perceived job insecurity but do not account for its association with health.
Five psychosocial scales in the Job Content Questionnaire	Statistically significant associations were found between sociodemographic characteristics and psychosocial factors, whereas the iso-strain conditions were not related to any sociodemographic parameter.
Sexual desire	Workers aged 20–49 years perceiving high levels of job insecurity are exposed to a significantly higher risk of decrease of sexual desire. No increased risk was found for employees aged 50–64 years old.
Perception of health status State anxiety Trait anxiety	The young women with temporary contracts showed only higher levels of job insecurity than the women with stable employment, while those over 50 years old also showed more elevated values of job strain. Temporary employment is mainly related to anxiety in men.

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (VII)

Author and year	Country	Population	Design	Sample	Independent variable
Ibrahim et al. (2009)	Canada	Working population	Longitudinal study	2556 respondents aged 18–56 years interviewed at three time points	Social class Job strain ratio Work social support Job insecurity
Nilsson et al. (2009)	Sweden	Employees in the radiology department within a Swedish university hospital	Qualitative study (open-ended interviews)	12 employees	Work reorganization
Park et al. (2009)	Republic of Korea	Male and female employees in small- and medium-sized enterprises	Cross-sectional study	3013 participants	Job stress (Korean occupational stress scale, KOSS-SF)
Simmons & Swanberg (2009)	United States	Working population	Cross-sectional study	3504 respondents (computer-assisted telephone interviewing)	Psychosocial job characteristics (including job insecurity) Working poor
Vanroelen et al. (2009)	Belgium	Flemish working population	Cross-sectional study	11 099 wage-earners	Several occupational stressors, including job insecurity
Artazcoz et al. (2010)	Spain	People currently working or retired	Cross-sectional study	2497 men and 1420 women 50–64 years of age	Reasons for early retirement
Blake et al. (2010)	United States	Working population	Cross-sectional study	1101 people aged 18 years and older	Job insecurity Lack of pay when absent from work Lack of paid sick leave

Outcome measure	Main results
Distress Depression Self-rated health	The positive effects of handling new technical challenges and the positive organizational climate seem to balance the negative effects of parallel downsizing and restructuring processes.
Healthy work condition	The positive effects of handling new technical challenges and the positive organizational climate seem to balance the negative effects of parallel downsizing and restructuring processes.
Depressive symptoms (Center for Epidemiologic Studies Depression Scale, CESD)	Most of subscales of job stress contributed to an increased risk of depressive symptoms, particularly job insecurity and occupational climate. Other subscales revealed different effects for males and females.
Depressive symptoms	Job insecurity was the single significant correlate of depressive symptoms for working poor employees. For working non-poor employees, high mental demands and low supervisor and co-worker support were associated with depressive symptoms.
Persistent fatigue; Musculoskeletal complaints; Emotional well-being	Occupational stressors constitute five dimensions: immaterial demands, physical demands, control over the working environment, social relationships at work and employment uncertainty. All of them are significantly related with at least one of the health outcomes – with immaterial demands having the strongest effects
Self-perceived health status Mental health	Forced early retirement owing to organizational reasons is related to poor health indicators only among female manual workers.
Compliance with pandemic influenza mitigation recommendations requiring social distancing	Inability to work from home, lack of paid sick leave and income are associated with working adults' ability to comply.

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (VIII)

Author and year	Country	Population	Design	Sample	Independent variable
Delp et al. (2010)	United States	Home care workers	Cross-sectional study	1614 Los Angeles home care workers on the state payroll in 2003 (telephone interviewing)	Determinants of job satisfaction
Fernandez et al. (2010)	United States	Working population	Longitudinal study	2782 employees from a group-randomized weight gain prevention intervention	Psychosocial chronic acute stressors
Holden et al. (2010)	Australia	Working population	Cross-sectional study	78 000 workers	Health status Working conditions
Kalil et al. (2010)	United States	Older adult men and women	Longitudinal study	190 men and women born between 1935 and 1952	Job insecurity
László et al. (2010)	16 European countries	Working population	Cross-sectional study; meta-analysis	23 245 subjects aged 45–70 years from three studies	Job insecurity
Libby et al. (2010)	United States	Active population	Longitudinal study	81 097 respondents followed from 2004 to 2007	Labour market situation (employed, unemployed, recent job loss, recent job gain)
Lu (2010)	Taiwan	Taiwanese older workers	Cross-sectional study	388 respondents aged 50 years and above	Descriptive study

Outcome measure	Main results
Job satisfaction	Abuse from consumers, unpaid overtime hours, and caring for more than one consumer as well as work-health demands predict less satisfaction. Some physical and emotional demands of the dyadic care relationship are unexpectedly associated with greater job satisfaction. Social support and control, indicated by job security and union involvement, have a direct positive effect on job satisfaction.
Weight status (BMI)	Job insecurity and high job strain were not found to have a significant effect on weight status, once removed the effect of mediating variables.
Absenteeism; Work performance losses	Hours expected to work, annual wage and job insecurity play a vital role in the association between health, and work attendance and self-reported work performance. Australian working conditions are contributing to both absenteeism and low work performance, regardless of health status.
Physical health outcomes Mental health outcomes	Men who experience job insecurity rate themselves in significantly poorer physical health and have higher blood pressure and higher levels of urinary catecholamines compared with men who do not experience job insecurity, and women who do. Women who experience job insecurity show higher depressive symptoms and report more hostility, loneliness and personal stress compared with women who do not experience job insecurity and men who do.
Self-rated health Lifetime chronic diseases	Persons with insecure jobs were at an increased risk of poor health in most of the countries included in the analysis, even when this relationship was adjusted by possible confounders like age, sex, education, and marital status.
Mental distress	Depressed people who experienced job loss or unemployment were significantly more distressed than depressed people who were employed. Among depressed people, on all measures of distress except one (worthlessness), unadjusted distress levels for those who gained a job were higher than for those who had lost a job.
Employment and underemployment	A rather substantial percentage of people continued to work well into their older years. The underemployment rates were substantial in the older age, and less-educated workers and women were more at risk. Age, sex, personal health, spousal health, and family income were significant predictors of continued employment after age 50 years. Sex and education were also significantly related to the risk of underemployment.

Table 1. Overview of epidemiological studies: Job insecurity, downsizing and health (1990-2011) (IX)

Author and year	Country	Population	Design	Sample	Independent variable
Meltzer et al. (2010)	United Kingdom	Working population	Cross-sectional study	3581 respondents (1746 men and 1835 women) aged 16–64 years	Job insecurity Socioeconomic circumstances
Østhus & Mastekaasa (2010)	Norway	Working population	Longitudinal cohort study	2 402 727 in the initial dataset	Organizational downsizing
Woo et al. (2010)	Republic of Korea	Workers involved in labour disputes and massive layoffs in a large auto factory	Cross-sectional study	502 workers participating in a support programme	Downsizing and restructuring
Raymo et al. (2011)	United States	Cohort of graduates from Wisconsin high schools in 1957	Longitudinal study	Sample of 8609 men and women	Involuntary job loss Exposure to “bad jobs” Labour union membership

Outcome measure	Main results
Depression	Job insecurity has a strong association with feelings of depression even after controlling for demographic characteristics (age and sex), economic factors (personal debt) and work characteristics (type of work and level of responsibility).
Number of sickness absence days Number of sickness absence episodes	Some weak indications that downsizing may lead to slightly less sickness absence, but the overall impression is that downsizing has few if any effects on the sickness absence of the remaining employees.
Severe occupational stress measured through Worker's Stress Response Inventory (WSRI) and Heart Rate Variability	The mean WSRI score of the workers remaining employed in the automobile factory was higher than that of the unemployed.
Early retirement	Experience of involuntary job loss and exposure to bad jobs are associated with a lower risk of retiring before age 65 years, whereas labour union membership is associated with a higher likelihood of early retirement. These relationships are stronger for men than for women.

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Table 2. Overview of epidemiological studies: temporary employment, precarious employment and health (1990–2011) (I)

Author and year	Country	Population	Design	Sample	Independent variable
Viens (1996)	Canada	Nursing graduates	Qualitative study	31 nursing graduates working in 5 different hospitals followed during 18 months	Change of employment conditions in health care institutions
Silverstein et al. (1998)	United States	Washington State Fund claims' sample 1987–1995	Case study	21 142 Cases of musculoskeletal disorders	Industrial Classifications Temporary work help agencies
Martens et al. (1999)	Belgium	Employees who received sickness benefits	Case-control study	480 patients	Non-flexible work Flexible work (temporary, on-call, continuous hours, irregular compressed weeks)
Morris (1999)	United States	Manufacturing setting	Qualitative study in three focus group interviews	20 individuals	Permanent Temporary
Aronsson (1999)	Sweden	Statistics Sweden's labour market survey	Cross-sectional study	1564 workers	Permanent Non-permanent (substitutes, probationary, vacation, seasonal, employed on projects, emergency workers)
Aronsson (1999)	Sweden	Statistics Sweden's labour market survey	Cross-sectional study	1564 workers	Permanent Non-permanent (substitutes, probationary, vacation, seasonal, employed on projects, emergency workers)

Outcome measure	Main results
Adjustment to work conditions	The students' precarious work situation as occasional nurses on call becomes a way of life. In the absence of job opportunities, they must develop adjustment strategies to ensure professional survival. to provide care with no continuity and without any hope of ever belonging to a unit. Meanwhile, she questions herself about the quality of care she is giving and her future as a nurse.
Work-related Disorders of the upper extremities (musculoskeletal disorders)	Temporary assembly and machine operator has been in the top 10 industries for shoulder disorders. Industries characterized by manual handling and repetitive work have high rate ratio of upper extremities.
Subjective physical Mental well-being Quality of sleep	Patients working rotating shifts, compressed weeks, and irregularly changing hours showed significantly more health complaints, more problems related to their mental performance, and more sleeping problems than a control group of workers with non-flexible work schedules. Patients working on temporary employment contracts reported significantly more problems with their mental performance.
Injuries	An apparent two to three times higher injury frequency rate for temporary employees was identified in one manufacturing setting compared with permanent workers.
General health risks	More contingent workers than permanent employees report a lack of working environment knowledge. Probationary, seasonal, and emergency requirement employees have a negative impact on their risk behaviour, which the ratio of those "caring less" to those "caring more" is very high.
Mental symptoms (headaches, fatigue and slightly depressed, upper-back pain)	28% of permanent employees who were not in their preferred occupation reported significantly more headaches and greater fatigue and slight depression than did those in comparison groups. Temporary employment generally showed the same symptom level, regardless of whether they were in their preferred occupation. On the other hand, there was such an excess risk of upper-back pain for temporary employees not working in their preferred occupation.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (II)

Author and year	Country	Population	Design	Sample	Independent variable	
Failde et al. (2000)	Spain	Hospital employees	Cross-sectional study	890 employees	Permanent Temporary	
Benavides et al. (2000)	15 European countries	Employed people	Cross-sectional survey	15 146 employees	Permanent Precarious	
Virtanen et al. (2000)	Finland	10 Finnish hospitals	Cross-sectional study	5650 workers: 674 men and 4976 women	Permanent Contingent	
Nola et al. (2001)	Italy	Workers affiliated with 16 temporary work agencies	Cross-sectional study	470 000 workers	Temporary workforce	
Aronsson et al. (2002)	Sweden	Statistics Sweden's labour market survey of employed people, 1997	Cross-sectional study	2767 workers	Permanent Probationary Seasonal On-call Project work Other temporary	
Amuedo-Dorantes (2002)	Spain	Representative sample, 1997	Retrospective study	3804 workers	Permanent Temporary	

Outcome measure	Main results
Low back pain	<p>The objective was to identify the occupational and non-occupational factors that would predict low back pain in the employees of a university hospital in southern Spain.</p> <p>Temporary employment situation are protective factors of suffering back pain (OR 0.4; 95% CI: 0.23–0.40).</p>
Stress Overall fatigue Muscular pains Backache Job satisfaction Absenteeism	<p>Precarious employment from 15 European countries was positively associated with job dissatisfaction but negatively associated with absenteeism and stress.</p> <p>Precarious employment, particularly full-time precarious employment is likely to be associated with fatigue, backache and musculoskeletal pain.</p> <p>Sole traders generally reported a high percentage of all outcomes, except for absenteeism.</p>
Self-rated health Chronic disease Minor mental disorder Sickness absence	<p>After adjustment for demographic and work-related characteristics, contingent employees had better self-rated health status (OR 0.76; 95% CI 0.62–0.94) and lower sickness absence rates between the groups (OR 0.90; 95% CI 0.85–0.95).</p> <p>There were no differences in the prevalence of diagnosed chronic diseases and minor mental disorder between the groups.</p>
Occupational accidents	<p>Temporary workers have high occupational accidents: overall frequency index was 92.1. The mean age accident was 27.8 years, mean duration of sick leave 13.7 days and the main causes were work tools (51.5%). 76% of the accidents concerned unskilled manual workers. Temporary work is related to an increased risk of occupational accidents.</p>
Heartburn Stomach ache Discomfort Sleep difficulties Back or neck pain Depression	<p>Regarding health, as reflected in symptoms of a psychosomatic nature, the data do not support our hypothesis as consistent as is the case for work conditions. However, people on call or substitutes show strikingly more health complaints than people in other forms of employment (back/neck complaints, fatigue, stomach complaints). The differentiation of properties between centre and periphery has been described in terms of uncertainty.</p>
Work-related injury	<p>Although temporary workers exhibit higher work injury and illness rates than permanent workers, they exhibit a lower likelihood of work injury and illness than permanent workers once the analysis controls for a given set of working conditions.</p> <p>The single most important determinant of the likelihood of work-related injury is working conditions, not education or tenure. Workers' occupations and working conditions prove to be more important in predicting work accidents and illnesses.</p>

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011)) (III)

Author and year	Country	Population	Design	Sample	Independent variable	
Virtanen et al. (2002)	Finland	Representative population	Cross-sectional study	5981 employees	Permanent Non-permanent Fixed term Government Subsidized	
Rodriguez (2002)	Germany and England	Representative sample, 1991–1993	Cross-sectional survey	10 104 (Germany) and 7988 (England)	Full-time permanent Temporary Part-time	
Silverstein et al. (2002)	United States	Washington State Fund claims' sample, 1990–1998	Case study	688 795 cases of musculoskeletal disorders	Industrial classifications Temporary work help agencies	
Virtanen et al. (2003)	Finland	Finnish representative working-age population, 1988–1993	Longitudinal cohort study	15 468 employees	Permanent Fixed-term Atypical workers Unemployed	
Kivimaki et al. (2003)	Finland	Representative sample, 1990–2000	Longitudinal cohort study	26 592 men and 65 759 women	Permanent From temporary to permanent Temporary Unemployed	
Bohle et al. (2004)	Australia	Two five-star hotels' employees	Qualitative study In-depth, non-directive interviews	26 full-time and 13 casual employees	Full-time Casual (temporary)	
Chillida Mde & Cocco (2004)	Brazil	Outsourced workers	Cross-sectional study	50 workers in the cleaning service of a university hospital in São Paulo	Descriptive study	

Outcome measure	Main results
Self-rated health	Compared with permanent employees, fixed-term men and women had better self-rated health (men OR 0.70; 95% CI 0.50–0.89, women 0.89: 95% CI 0.79–1.02), but women had more mental distress (OR 1.26: 95% CI, 1.09–1.45).
Perceived health	Controlling for background characteristics, the health status of part-time workers with permanent contracts is not significantly different from those who are employed full time. In contrast, people employed full time with fixed-term contracts in Germany are about 42% more likely to report poor health than those who have permanent work contracts. In Britain, only part-time work with no contract is associated with poor health.
Work-related disorders of neck, shoulder, upper extremities (musculoskeletal disorders)	Temporary help agencies are high-risk industries for musculoskeletal disorders. Using Washington Industrial Classes, temporary workers in assembly and administrative service were high on the prevention index, which ranks industries by averaging the ranks of their number of claims and their claims incidence rate of musculoskeletal disorders.
Self-rated health Chronic diseases Depression (BDI)	High odds of chronic disease and self-rated health were found among employed people with atypical contracts but not among fixed-term employers. Female atypical workers also had depression more often. Unemployed people had elevated odds of chronic disease and depression and female unemployed people had elevated odds for poor self-rated health and depression.
All-cause mortality Cause-specific mortality.	Cox proportional hazards models adjusted for age, occupational status, salary and change in occupational title showed that overall mortality was 1.2–1.6 times higher among male and female temporary employees compared with permanent employees. Temporary employment was associated with increased deaths from alcohol-related causes relative to permanent employees (HR 2.0; 95% CI: 1.3–6.0).
Sleep disturbance Fatigue Disrupted exercise Dietary regimes	In the same hotels, and doing largely the same jobs, casual employees had less desirable and predictable work schedules. Casual employees had greater work–life conflict and more associated health complaints than “permanent” workers.
Outsourced workers' profile	The two fundamental characteristics of this group are the high level of feminization and temporary contracts. Some kind of illness was diagnosed in approximately one third of the workers.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (IV)

Author and year	Country	Population	Design	Sample	Independent variable
Liukkonen et al. (2004)	Finland	Eight Finnish towns involved Public sector employees	Prospective cohort	6028 employees	Permanent Fixed-term Subsidized Social support
Bardasi & Francescani (2004)	England	British Household Panel Survey, 1991–2000	Longitudinal sample	3184 male and 3570 female workers	Permanent Seasonal or casual Full-time (>30 hours) Part-time (16–29 hours) Mini-jobs (<15 hours)
Benach et al. (2004)	European Union	ES1995, ES2000 All employed and self-employed people in 15 EU countries	Two cross-sectional surveys	15 146 (1995) 19 405 (2000)	Permanent Sole traders Fixed-term Temporary Small employers
Muhammed & Jamel (2004)	Canada	Large Canadian metropolitan city	Cross-sectional survey	376 employees	Standard Nonstandard Weekend work
Zeytinogla et al. (2005)	Canada	Occupational health survey from three mid-sized cities in southern Ontario	Qualitative design	8 union representatives, 59 workers, (11 focus group and 18 interviews)	Part-time jobs Casual jobs
Artazcoz et al. (2005)	Spain	National representative sample, 2002	Cross-sectional study	1474 men and 998 women	Permanent Temporary (fixed-term, non-fixed-term, no contract)

Outcome measure	Main results
Self rated health Mental distress (GHQ)	Fixed-term employment predicted better self-rated health and less mental distress compared with permanent employment. Co-worker support was most common in permanent and least common in subsidized employees and was associated with better self-rated health in women.
Mental health (GHQ) General health Life satisfaction Job satisfaction	Both temporary and part-time employment did not have long-lasting detrimental health effects regarding mental health, self-rated health and life satisfaction. Job satisfaction is significantly reduced for workers in seasonal and casual jobs and is higher for part-timers. Seasonal and casual workers turn out to be characterized by relatively worse well-being conditions.
Stress Fatigue Backache Job dissatisfaction	Precarious work was associated with back-pain in 1995, but this association decreased in 2000. In comparison with permanent employment, non-permanent employment reported high percentages of job dissatisfaction but low levels of stress. Full-time employment almost reported worse levels of health indicators than part-time employment.
Burnout, stress Psychosomatic health problem	Employees involved with weekend work and nonstandard work shifts reported significantly higher emotional exhaustion, job stress, and psychosomatic health problems than employees not involved with weekend work and standard workers.
Work-related stress Physical health Emotional health	Stress is a major occupational health problem for female part-time and casual workers in retail and consumer services. Stress from part-time and casual jobs results in repetitive strain injuries, migraine headaches, and feelings of low self-esteem, low motivation, and job dissatisfaction for women.
Poor mental health Job dissatisfaction Limitation in family formation	Fixed-term temporary contracts were not associated with poor mental health status. Working with non-fixed term temporary contracts is associated with poor mental health status among non-manual female workers and manual male workers (OR 3.87; 95% CI 1.52–9.85 and OR 4.30; 95% CI 1.89–9.4, respectively). Manual workers working with no contractors were positively associated with poor mental health and job dissatisfaction in both men and women.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (V)

Author and year	Country	Population	Design	Sample	Independent variable
Friedland et al. (2005)	United States	National working population Wave 1: 1986 Wave 2: 1989 Wave 3: 1994	Longitudinal study	1429 aged 25 years and older	Full-time Underemployment (part-time, low income and with few opportunities to gain skills)
Bernhard-Oettel et al. (2005)	Sweden	Two Swedish hospital employees	Cross-sectional survey	954 health care workers	Job insecurity Permanent full-time Permanent part-time Fixed-term On-call work
Aronson (2006)	Canada	Older women needing for supportive home care	Qualitative study	?	Privatization and service rationing of publicly provided home care
Benavides et al. (2006)	Spain	Representative sample of salaried workers in 2000 and 2001	Cross-sectional design	1 808 032 (1500 fatal injuries, 1 806 532 nonfatal injuries): 898 955 in 2000, 909 077 in 2001	Permanent Temporary
Kim et al. (2006)	Republic of Korea	Representative sample of salaried workers aged 20–64 years	Cross-sectional study	2086 men 1194 women	Standard Nonstandard (part-time, temporary, daily)

Outcome measure	Main results
Physical health Mental well-being	<p>Underemployed workers do report lower of health and well-being than adequately employed workers.</p> <p>Income: underemployed workers report higher levels of depression symptoms and lower positive self-concept.</p> <p>Hours: underemployed workers report lower level of positive self-concept but high levels of job satisfaction.</p> <p>Skill: underemployment is not significantly related to any of indicators of health and well-being.</p>
Mental distress (GHQ)	<p>Perceptions of the job (job insecurity, job control and demands), but not in type of employment contract, predicted health complaints.</p> <p>Type of employment interacted with perceptions of job insecurity, in that insecurity was associated with impaired well-being among permanent full-time workers.</p> <p>In comparison with full-time workers, there was a difference in the relationship between job insecurity and mental distress only for on-call employment, not part-time or fixed-term workers.</p>
Perceived quality of home care provided	<p>Study participants experienced cuts and, stemming from increasingly precarious employment conditions in the home care workforce, inconsistent care providers. These changes generated distress, insecurity and isolation in participants' lives.</p>
Nonfatal injuries Fatal injuries	<p>Temporary workers showed a rate ratio of 2.94 for nonfatal occupational injuries (95% CI 2.40–3.61) and 2.54 for fatal occupational injuries (95% CI 1.88–3.42).</p> <p>When these associations were adjusted by sex, age, occupation and especially length of employment, they lose statistical significance: for nonfatal injuries (OR 1.05; 95% CI 0.97–1.12) and for fatal injuries (OR 1.07; 95% CI 0.91–1.26).</p> <p>Lower job experience and knowledge of workplace hazards, measured by length of employment, is a possible mechanism to explain the consistent association between temporary workers and occupational injury.</p>
Depression Suicide ideation	<p>Nonstandard work status was associated with poor mental health after adjusting for age and socioeconomic position (education, occupational class and income)</p> <p>The pattern of the relationship between nonstandard work and mental health differs by sex. For women, nonstandard work was significantly associated with poor mental health. For men, the effect of unstable employment status on depression disappeared after adjusting for potential confounders. Although males tended to report more suicidal ideation, this difference was not statistically significant.</p>

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (VI)

Author and year	Country	Population	Design	Sample	Independent variable
Aydogan Ulker (2006)	Australia	Household Income and Labour Dynamics in Australia Survey	Cross-sectional study design	2876 men and 2430 women	Full Time Part time Unemployed (Regular day, regular evening, regular night, shift, on call)
Fischer et al. (2006)	Brazil	Nursing personnel at public hospitals	Cross-sectional study	696 workers (70% of the total workforce) in a university hospital in São Paulo	Exploratory study
Clarke (2007)	Canada	Individuals in precarious employment or having high employment strain levels	Qualitative study (interviews)	82 individuals interviewed living in Toronto and nearby communities	Precarious employment
Rodrigues et al. (2007)	Brazil	Nutritionists	Cross-sectional study, semistructured interviews	90 graduates; a subsample of 14 for the semistructured interviews	Descriptive study
Seifert et al. (2007)	Canada	Female general education teachers in two schools in Quebec	Qualitative and quantitative studies	19,914 aged 25-62.	Permanent Temporary with registered the Union "call-back" list. Atypical teachers
Garcia & Facchini (2008)	Brazil	Primary health care workers	Cross-sectional study	1249 primary health care workers in Florianópolis	Descriptive study

Outcome measure	Main results
Self-rated health General health (SF-36) Mental health Physical functioning	<p>Among women, most coefficients in all models are statistically nonsignificant, which implies very small magnitudes in terms of the correlation between nonstandard working hours and health.</p> <p>Among men, on the other hand, the negative relationship is more noticeable for self-rated health, general health and physical functioning than for mental health.</p>
Inadequate work ability (measured through Work Ability Index)	<p>The nursing profession is associated with stressful working conditions, contributing to inadequate Work Ability Index. This is in addition to poor living conditions and precarious work.</p>
Health outcomes	<p>A combination of an individual's desire for more permanent employment, the expectation that permanent employment will be found, and the support individuals receive from various sources are critical to understanding the health effects of precarious employment.</p>
Working conditions Professional profiles	<p>Despite clearly precarious employment links, clinical nutrition is the field with the largest number of professionals satisfied with their work conditions. Job stability is not always the main factor for professional satisfaction in this group.</p>
Distress	<p>Precarious work contracts can affect mental health not only through employment insecurity but also through negative effects on the ability to do one's job and take pride in one's work as well as weakening the interpersonal relationships on which successful, productive work depends.</p>
Complete-series vaccination of hepatitis B	<p>Complete-series vaccination was negatively associated with precarious employment status.</p>

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (VII)

Author and year	Country	Population	Design	Sample	Independent variable
Giatti et al. (2008)	Brazil	General population	Two cross-sectional studies (data from years 1998 and 2003)	85 384 (1998) and 89 063 (2003) respondents aged 15 years and over	Informal work or unemployment Living in households with at least one informal or unemployed worker
Kim et al. (2008)	Republic of Korea	A representative sample of salaried workers aged 20–64 years in 2001	Cross-sectional study	1563 men and 1045 women	Standard Nonstandard (part-time, temporary, daily)
Kim et al. (2008)	Republic of Korea	Representative sample, 1997	Longitudinal study	1991 men and 1378 women	Regular/full-time Temporary/daily Part-time Contingent
Silva et al. (2008)	Brazil	Motorcycle couriers	Cross-sectional study	377 and 500 motorcycle couriers from two medium-sized cities in the state of Paraná	Employment and working conditions
García et al. (2009)	Spain	Immigrant workers	Qualitative study (in-depth interviews)	43 interviews with informant from 34 different organizations working with immigrant collectives	Descriptive study

	Outcome measure	Main results
	Poor self-rated health	At the individual level, poor self-rated health was positively associated with informal work and unemployment. Living in households with at least one informal or unemployed worker was positively associated with poor self-rated health, regardless of individual factors and socioeconomic characteristics of the household.
	Self-rated health Specific chronic diseases (musculoskeletal disorder, respiratory, circulatory, digestive, mental disorder)	Nonstandard employment was significantly associated with higher risk of self-rated health and chronic condition after adjusting for socioeconomic position and health behaviour. The pattern in the relation between nonstandard work and specific chronic diseases greatly differed by sex: (1) Among men, nonstandard work arrangements were significantly associated with musculoskeletal disorders (OR 1.97, 95% CI 1.24–3.19) and liver disease (OR 2.83, 95% CI 1.27–6.32). (2) Among women, nonstandard employment was related to mental disorders (OR 3.25, 95% CI 1.40–7.56).
	Self-rated health	Precarious employment was associated with worse health in both men and women. By further controlling for sociodemographic covariates, the odds ratios were attenuated but remained significant. Job satisfaction, especially as related to job insecurity, and monthly wage further attenuated the effects.
	Accidents rate during the 12 months prior to the survey	There was no significant difference in the accident rates despite greater exposure to hazardous work and traffic conditions in one of the cities. The study detected high precarious work conditions, high exposure to hazardous traffic conditions, and high accident rates among motorcycle couriers.
	Characteristics, working conditions, and occupational health situation of immigrant workers	Informants described immigrant workers' difficulties in having health problems recognized as work related, due to irregular and precarious employment, employers' and insurance companies' reluctance and immigrants' lack of knowledge.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (VIII)

Author and year	Country	Population	Design	Sample	Independent variable
Hämmig et al. (2009)	Switzerland	Working population	Cross-sectional study	4371 employees aged 20–64 years	Occupation and employment conditions Combined time- and strain-based work–life conflict Sex
Kompier et al. (2009)	Netherlands	Working population	Two-year prospective cohort study	1856 respondents (2004–2006)	Contract type Changes “upward” and “downward” across time
Moulin et al. (2009)	France	Active population examined in the Health Examination Centres of the French General Health Insurance	Cross-sectional study	767 184 people, aged 26–59 years, examined between 2003 and 2005	Employment status (insecure employment; government-sponsored jobs; duration of unemployment)
Nätti et al. (2009)	Finland	Finnish employees	Longitudinal study	4502 (study 1) and 3502 (study 2) workers	Type of employment contract (permanent/temporary, degree of satisfaction and voluntary involuntary basis)
Perlman & Bobak (2009)	Russian Federation	Working population	Longitudinal study	4465 men and 4158 women (1994–2003)	Education Occupation Unemployment Insecure employment
Porthé et al. (2009)	Spain	Immigrant workers	Qualitative study (interviews)	44 undocumented immigrant workers from four different countries living in four Spanish cities	Descriptive study

Outcome measure	Main results
Physical and mental health problems	Every eighth person within the study population had a high or very high work–life conflict score. Prevalence rates are clearly above average in certain occupations and employment conditions. In both men and women, work–life conflict is associated with several physical and mental health problems. The overall prevalence rate of (very) high work–life conflict is higher in men than in women, but associations between degrees of work–life conflict and most health outcomes are stronger in women than in men.
Quality of working life Health Well-being	Some evidence was found that a positive change in employment contract was associated with a better quality of working life and better mental health, whereas the opposite was true for a negative contract change.
Poor perceived health Smoking Lack of gynaecological follow-up; Obesity Untreated caries High blood pressure	This study showed quantitative relationships between job insecurity, unemployment and health. In particular, workers having government-sponsored jobs and long-time unemployed people were at high risk of health problems.
Mortality	Temporary employees who either felt the insecure situation unsatisfactory or who worked in temporary work involuntarily, had higher risk of mortality than permanent employees . Temporary employees are not a homogeneous group
Mortality	Mortality was significantly associated with payment in consumer goods among men, compulsory unpaid leave among women, and male unemployment. Associations with death within one year of entry were generally somewhat stronger than the association with mortality over the whole study period
Precarious employment dimensions	The characteristics of precariousness perceived by undocumented immigrants included high job instability; disempowerment due to lack of legal protection; high vulnerability exacerbated by their legal and immigrant status; lower wages than co-workers; limited social benefits and difficulty in exercising their rights; and finally, long hours and fast-paced work. They also describe physical and mental problems associated with their employment conditions and legal situation.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (IX)

Author and year	Country	Population	Design	Sample	Independent variable
Rotenberg et al. (2009)	Brazil	Nursing personnel	Cross-sectional study	Permanent workers ($n = 642$) and workers with precarious jobs ($n = 552$)	Night work Type of contractual employment
Yeh et al. (2009)	Taiwan, China	Working population	Cross-sectional study	8906 men and 6382 women aged 25–65 years	Pay system (fixed salary, performance-based pay (with a basic salary); piece-rated or time-based pay (without a basic salary))
Agudelo-Suárez et al. (2010)	Spain	Native-born and immigrant workers having a health problem	Cross-sectional study	Convenience sample of 2059 workers (1617 foreign-born) living in Barcelona, Madrid, Huelva and Valencia	Native-born or immigrant status
Heponiemi et al. (2010)	Finland	Public sector employees who had no sickness absences during the study year	Cross-sectional study	18 454 Public sector employees	Contractual job insecurity (fixed-term versus permanent employment contract) Subjectively assessed job insecurity
Kachi et al. (2010)	Japan	Professional caregivers for older people	Cross-sectional study	10 107 professional caregivers aged 18 years and older	Type of employment (full-time permanent, full-time precarious and part-time precarious)
Nishimura & Ohashi (2010)	Japan	Mothers and fathers in the early postnatal period	Cross-sectional study	156 fathers and 181 mothers	Risk factors of paternal depression

	Outcome measure	Main results
	Work Ability Index	Current night work was significantly associated with inadequate Work Ability Index (versus day work with no experience in night work) only for precarious workers.
	Psychosocial job characteristics Self-reported burnout status	Employees earning through performance-based and piece-rated pay systems showed higher scores for personal burnout and work-related burnout as well as worse psychosocial job characteristics compared with those who were given fixed salaries.
	Sickness presenteeism	Foreign-born workers were more likely to report sickness presenteeism compared with their Spanish-born counterparts, especially those living in Spain for less than 2 years.
	To report working while ill	Fixed-term employees were less likely to report working while ill than permanent employees. This association was stronger among older employees. Subjective job insecurity might be even more important than contractual insecurity when a public sector employee makes the decision to go to work despite feeling ill.
	Intention to leave	Compared with part-time precarious workers, full-time permanent workers and full-time precarious workers were more likely to report intent to leave. Controlling for overtime work greatly attenuated the former association.
	Depression Postnatal depression	Paternal depression was associated with unstable employment, history of psychiatric treatment, and unintended pregnancy. Of eight fathers with unstable employment, seven were temporary employees and one was unemployed.

Table 2. Overview of epidemiological studies: Temporary employment, precarious employment and health (1990-2011) (X)

Author and year	Country	Population	Design	Sample	Independent variable
Porthé et al. (2010)	Spain	Immigrant workers	Qualitative study (interviews)	Criterion sampling of 129 immigrant workers with documented and undocumented administrative status.	Descriptive study
Tompa et al. (2010)	Canada	Working population	Longitudinal study	Sample of 5307 individuals 9574 distinct job episodes between 2000 and 2004	Temporary employment
Vives et al. (2010)	Spain	Working population	Cross-sectional study	6968 subjects	Employment precariousness (Employment Precariousness Scale, EPRES)
McNamara et al. (2011)	Australia	Permanent and temporary workers in the hotel industry	Cross-sectional study	150 workers from 8 three-star hotels in urban and regional areas around Sydney	Permanent full-time work Temporary work

	Outcome measure	Main results
	Precarious employment dimensions	Immigrant workers reported that precarious employment is characterized by high job instability, a lack of power for negotiating employment conditions, and defenselessness against high labour demands. They described insufficient wages, long working hours, limited social benefits and difficulty in exercising their rights. Undocumented workers reported greater defenselessness and worse employment conditions.
	First all-cause sickness absence of one week or more	Temporary employment was associated with a lower rate of sickness absence after controlling for tenure, prior health status and several other individual and job characteristics.
	Psychosocial working environment (COPSOQ ISTAS21) and perceived general and mental health (SF-36)	Our results provide evidence in support of the psychometric properties of the EPRES scale. Patterns across known groups and correlation coefficients with psychosocial working environment measures and perceived health demonstrated the expected relations, providing evidence of construct validity.
	Perceived job security, control over working hours, and work–life conflict	Temporary workers perceived themselves as less in control of their working hours, than permanent workers. However, they also reported lower levels of work intensity and working hours.

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Table 3. Overview of longitudinal observational studies: associations between an adverse psychosocial working environment (“job strain”, “effort–reward imbalance” and “organizational injustice”) and physical diseases (mainly cardiovascular) or mental disorders (mainly depression), in chronological order, 1977–2011

Author and year	Country	Population	Design	Sample	Independent variable
Theorell (1977)	Sweden	Building construction workers	Longitudinal study	5187	Workload index
La Croix (1984)	United States	Framingham population	Longitudinal study	876	Job control and demands (individual and ecological)
Alfredsson (1985)	Sweden	All working men and women in Stockholm	Longitudinal study	958 096	Hectic work, few chances to learn new things and monotonous work (ecological)
Haan (1988)	Finland	Metal workers	Longitudinal study	902	Job strain – physical strain, variety and control (individual)
Reed (1989)	United States	Hawaiians of Japanese decent, 45–65 years old, population-based	Longitudinal study	4737	Strain – decision latitude and mental demands (ecological)
Johnson (1989)	United States	The Honolulu Heart Program	Longitudinal study	7219	Iso-strain (imputed)
Siegrist (1990)	Germany	Male blue collar workers	Longitudinal study	416	Effort–reward imbalance
Netterström (1993)	Denmark	Urban bus drivers	Longitudinal study	2045	Job variety and satisfaction (individual)

Outcome measure	Main results
Fatal coronary heart disease and nonfatal myocardial infarction	1.98
Fatal coronary heart disease, nonfatal myocardial infarction, coronary insufficiency and angina (not stated)	Women: 2.9 Men: no association Ecological exposure was associated with risk in men and women
Nonfatal myocardial infarction hospitalizations	Men: Hectic work + non-learning: standardized mortality rate (SMR) = 128 (109–148) Hectic monotonous work: SMR = 118 (102–135) Women: Hectic monotonous work: SMR = (112–233)
Fatal coronary heart disease and nonfatal myocardial infarction	Strain (low control, low variety, high physical strain) 4.95 ($P = 0.03$)
Fatal coronary heart disease and nonfatal myocardial infarction	Job strain inversely associated with coronary heart disease incidence ($P = 0.07$)
Cardiovascular disease death	1.92 (1.15–3.21)
Incident fatal or nonfatal coronary heart disease	4.5 (1.43–14.30)
Fatal coronary heart disease (59)	Choose same job: 2.2 (1.2–4.0) Not looking for new job: 6.5 (1.6–27.0) Cannot use skills 1.5 (0.9–2.5) High work pace: 0.9 (0.5–1.6) Job very varied: 2.5 (1.4–4.5)

Author and year	Country	Population	Design	Sample	Independent variable
Suadicani (1993)	Denmark	Survivors from a 15-year worker-based cohort study	Longitudinal study	1638	Job influence, monotony, pace, satisfaction, ability to relax
Alterman (1994)	United States	Chicago Western Electric employees (74% blue collar)	Longitudinal study	1683	Job strain – decision latitude and mental demands (ecological)
Hlatky (1995)	United States	Employed patients undergoing coronary angiography	Longitudinal study	1489	Job strain, decision latitude and mental demands
Hoffmann (1995)	Switzerland	Patients 7 weeks after first myocardial infarction	Longitudinal study	222	Job work load
Bosma (1997)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	10 308	Job control, job demands, social support at work
Lynch (1997)	Finland	Finnish men, 42–60 years, population-based	Longitudinal study	2297	Job demands, income
Steenland (1997)	United States	United States citizens 25–74 years old, population-based, 58% blue collar	Longitudinal study	3575	Job strain – job control and job demand (ecological)
Bosma (1998)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	10 308	Job control, job demands, social support at work, effort–reward imbalance (individual)

Outcome measure	Main results
Fatal coronary heart disease and nonfatal coronary heart disease	Only inability to relax after work associated with coronary heart disease: 2.9 (1.3–6.1)
Fatal coronary heart disease, nonfatal myocardial infarction, coronary insufficiency and angina (not stated)	Per tertile increase in exposure <i>Fatal coronary heart disease</i> Job control: 0.76 (0.59–1.00) Job demands: 0.78 (0.48–1.26) Job strain: 1.40 (0.92–2.14) <i>nonfatal coronary heart disease</i> Job control: 0.87 (0.57–1.31) Job demands: 1.07 (0.54–2.12) Job strain: 1.54 (0.85–2.80)
Fatal coronary heart disease and nonfatal myocardial infarction	Job strain Fatal coronary heart disease: 1.01 (0.51–2.01) Total coronary heart disease : 0.96 (0.62–1.46)
Poor medical outcome (death, reinfarction, NYHA \geq III)	High workload was positively associated with outcome ($P = 0.01$)
Diagnosed coronary heart disease, angina	Low job control Coronary heart disease: 1.26 (0.67–2.39) Angina: 2.02 (1.22–3.34) Job demands and social support at work not related. Ecological and individual measures similar
Fatal coronary heart disease and nonfatal myocardial infarction	High demands, low rewards 2.3 (1.35–3.92)
Fatal coronary heart disease and nonfatal myocardial infarction	High control: 0.71 (0.54–0.93) High demands: 0.81 (0.61–1.09) Job strain: 1.08 (0.81–1.49)
Angina pectoris and doctor-diagnosed ischaemia	Effort–reward imbalance: 2.15 (1.15–4.01) Low control (individual): 2.38 (1.32–4.29) Low job control (ecological): 1.56 (1.08–2.27) Job demands and social support at work unrelated

Author and year	Country	Population	Design	Sample	Independent variable
Stansfeld (1998)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	10 308	Effort–reward imbalance Decision latitude Job demands
Niedhammer (1998)	France	Male and female employees in the French Gas and Electricity Company	Longitudinal study	11 552	Job strain
Stansfeld (1999)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	10 308	Effort–reward imbalance Decision authority Skill discretion Job demands
Orth-Gomér (2000)	Sweden	Women post-acute coronary event	Longitudinal study	292	Job strain (job demands, job control)
Lee (2002)	United States	Representative sample of US nurses	Longitudinal study	35 038	Job strain
Kuper (2002)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	9870	Effort–reward imbalance
Kuper (2002)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	6918	Effort–reward imbalance
Kivimäki (2002)	Finland	Male and female industrial employees	Longitudinal study	812	Job strain, effort–reward imbalance

Outcome measure	Main results
Poor self-rated functioning (SF-36 Health Survey)	Physical: men: 1.44 (1.07–1.94); women: 2.01 (1.15–3.52) Mental: men: 1.78 (1.34–2.37); women 2.33 (1.36–3.98) Physical: men: 1.55 (1.24–1.93); women: 1.17 (0.82–1.66) Mental: men: 1.06 (0.86–1.30); women: 1.02 (0.73–1.43) Physical: men: 1.12 (0.91–1.39); women: 1.57 (1.14–2.17) Mental: men: 1.02 (0.83–1.23); women: 1.91 (1.39–2.61)
Depressive symptoms	Men: 1.4 (1.2–1.6) Women: 1.4 (1.2–1.7)
Mild to moderate mental disorder (mostly depression)	Men: 2.57 (1.8–3.6); women: 1.67 (1.0–2.9) Men: 1.29 (1.1–1.5); women: 1.37 (1.1–1.8) Men: 1.11 (0.9–1.3); women: 1.09 (0.8–1.4) Men: 1.33 (1.1–1.6); women: 1.24 (1.0–1.6)
Fatal coronary heart disease, nonfatal myocardial infarction, revascularization	Severe work stress: 1.67 (0.64–4.32) Age adjusted only: Low control: 1.62 (0.84–3.01) High demands: 1.21 (0.63–2.32)
Fatal coronary heart disease, nonfatal myocardial infarction	High-strain jobs: 0.71 (0.42–1.19) Passive jobs: 1.08 (0.69–1.69) Active jobs: 0.91 (0.54–1.53)
Incident coronary heart disease	1.3 (1.12–1.65)
Poor self-rated functioning (SF-36 Health Survey)	Physical: 1.4 (1.18–1.67) Mental: 2.3 (1.94–2.77)
Fatal coronary heart disease	High job strain: 2.22 (1.04–4.73) High effort–reward imbalance: 2.42 (1.02–5.73)

Author and year	Country	Population	Design	Sample	Independent variable
Bültmann (2002)	Netherlands	Personnel from 45 companies	Longitudinal study	8833	Job strain
Paterniti (2002)	France	Employees of gas and electric companies	Longitudinal study	10 519	Demand Control
de Lange (2002)	Netherlands	Personnel from 34 companies	Longitudinal study	1789	Job strain
Bildt (2002)	Sweden	Inhabitants of Stockholm County	Longitudinal study	484	Job strain
Kivimäki (2003)	Finland	Hospital personnel	Longitudinal study	3773	Procedural injustice
Kuper (2003)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	10 308	Job strain, job demands, decision latitude
Kuper (2002)	United Kingdom	Whitehall II, male and female civil servants	Longitudinal study	6918	Effort–reward imbalance
Eaker (2004)	United States	Framingham offspring study population	Longitudinal study	3039	Job strain

	Outcome measure	Main results
	Affective disorder (GHQ)	Job insecurity Significant effects in women (OR 1.59–1.30) for high demand, “low social support” Significant effects in men (OR 1.93–1.38) in all model components
	Depression (CESD)	Significant effects of all 3 models components on depression (control only in men). Outcomes based on hierarchical regression analysis
	Depression (CESD)	Significant effect of job strain on depression (analysis of variance).
	Subclinical depression (DSM-III-R interview)	OR men 2.2 (0.7–6.9); OR women: 3.4 (1.6–7.2)
	Affective disorder (GHQ)	OR men: 2.13; OR women: 1.40
	Fatal coronary heart disease, nonfatal myocardial infarction	All coronary heart disease: High demand and low control: 1.38 (1.1–1.75)
	Poor self-rated functioning (SF-36 Health Survey)	Physical: 1.4 (1.18–1.67) Mental: 2.3 (1.94–2.77)
	Fatal coronary heart disease, nonfatal coronary heart disease	Fatal coronary heart disease Men: Job strain: 1.1 (0.66–2.00) Low strain: 0.85 (0.48–1.5) Passive: 0.99 (0.59–1.68) Women: Job strain: 1.00 (0.37–2.75) Low strain: 0.76 (0.24–2.42) Passive: 1.37 (0.63–2.97)

Author and year	Country	Population	Design	Sample	Independent variable
Niedhammer (2004)	France	Male and female employees in the French gas and electricity company	Longitudinal study	6286	Effort–reward imbalance
Head (2004)	United Kingdom	Whitehall II civil servants	Longitudinal study	8280	Effort–reward imbalance
Kumari (2004b)	United Kingdom	Whitehall II civil servants	Longitudinal study	8067	Effort–reward imbalance
Wang (2004)	Canada	Canadian employees	Longitudinal study	7371	Job strain
Marchand (2005)	Canada	Male and female employees	Longitudinal study	7311	Job demand, job control
Godin (2005)	Belgium	Male and female workers of four Belgium enterprises	Longitudinal study	1986	Effort–reward imbalance
Kivimäki (2005)	United Kingdom	Men from Whitehall II study	Longitudinal study	6442	Justice at work
Ylipaavalniemi (2005)	Finland	Public sector employees	Longitudinal study	48 115	

	Outcome measure	Main results
	Poor self-rated health	Men: 1.8; women: 2.2
	Alcohol dependence	Men: 1.59 (1.1–2.3); women: 1.15 (0.6–2.3)
	Incident type 2 diabetes	Men: 1.65 (1.0–2.8); women: 0.93 (0.4–2.0)
	Diagnosed depression	1.3 (1.1–1.6) 1.2 (1.0–1.5)
	Diagnosed depression	1.0 (0.9–1.1)
	Depression Anxiety Somatization	Men: 2.8 (1.3–5.7); women: 4.6 (2.3–9.0) Men: 2.3 (1.1–4.8); women: 4.5 (2.1–9.8) Men: 2.0 (0.9–4.4); women: 3.6 (1.6–8.2)
	Incident cardiovascular disease	1.41 (1.01–1.96)
	Diagnosed depression	1.2 (0.9–1.6)

Author and year	Country	Population	Design	Sample	Independent variable
de Bacquer (2005)	Belgium	Belgian job stress project	Longitudinal study	14 337	Job strain, iso-strain
Uchiyama (2005)	Japan	Hypertension follow-up group study	Longitudinal study	1615	Job strain
Netterström (2006)	Denmark	Men from the MONICA II study	Longitudinal study	659	Job strain
Kuper (2006)	Sweden	Swedish women aged 30–50 years	Longitudinal study	48 066	Job strain
Chandola (2006)	United Kingdom	Whitehall II civil servants	Longitudinal study	7357	Job strain (and social isolation)
Rugulies (2006)	Denmark	Danish population	Longitudinal study	4133	Job strain
Elovainio (2006)	Finland	Industrial employees	Longitudinal study	804	Justice at work
Ferrie (2006)	England	Civil servants (Whitehall II)	Longitudinal study	7419	Interpersonal injustice
Kornitzer (2006)	Belgium, France, Spain, Sweden	Middle-aged male occupational cohorts	Longitudinal study	21 111	Job strain Demand Control
Shields (2006)	Canada	Representative population sample	Longitudinal study	17 276	Job strain
Ahola (2007)	Finland	Dentists	Longitudinal study	2555	Job strain
Clays (2007)	Belgium	Male and female employees from nine companies	Longitudinal study	2139	Demand Control Job strain Social support Iso-strain

	Outcome measure	Main results
	Incident coronary heart disease	1.35 (0.73–2.49)
	Incident cardiovascular disease	6.66 (0.93–47.70)
	Incident ischaemic heart disease	2.40 (1.01–5.68)
	Fatal coronary heart disease, nonfatal coronary heart disease	1.3 (0.7–2.5)
	Metabolic syndrome	2.39 (1.36–4.21)
	Depressive symptoms	Demand Men: 0.5 (0.2–1.2) Women: 1.0 (0.5–1.7) Control Men: 0.6 (0.3–1.2) Women: 1.9 (1.1–3.4)
	Cardiovascular disease death	1.64 (1.00–2.78)
	Affective disorder (GHQ)	OR: men 1.42 (1.11–1.84) OR: women 1.40 (0.98–2.00)
	Documented incident coronary events	Age adjusted HR high vs low demand: 1.4 (1.08–1.97) Age adjusted job strain 1.53 (1.0–2.35) Fully adjusted HR (median split): demands 1.46 (1.08–1.97) Fully adjusted HR (strain vs relaxed): 1.46 (0.96–2.25)
	Incident depression WMH Composite International Diagnostic Interview (WMH-CIDI)	OR men: 2.9 (1.5–5.4); OR women: 1.2 (0.8–1.9)
	Depressive symptoms	3.4 (2.0–5.7)
	Depressive symptoms (CESD)	OR men: 1.3 (0.9–2.0); OR women: 1.2 (0.7–1.9) OR men: 1.1 (0.7–1.6); OR women: 1.9 (1.1–3.3) OR men: 1.6 (1.0–2.5); OR women: 1.7 (1.0–3.0) OR men: 1.0 (0.7–1.5); OR women: 1.3 (0.8–2.2) OR men: 1.5 (0.9–2.7); OR women 2.5 (1.3–4.9)

Author and year	Country	Population	Design	Sample	Independent variable
Plaisir (2007)	Netherlands	Male and female employees	Longitudinal study	2646	Demand Control Social support (protective factor)
Aboa-Éboulé (2007)	Canada	Men and women with first myocardial infarction	Longitudinal study	972	Job strain
Kivimäki (2007)	Finland	Public sector employees	Longitudinal study	47 351	Effort–reward imbalance
Kivimäki (2007)	Finland	Hospital personnel	Longitudinal study	21 938	Effort–reward imbalance
Kivimäki (2008)	Sweden	Industrial male employees (WOLF)	Longitudinal study	5698	Job strain
Bonde (2009)	Denmark	Public service workers	Longitudinal study	18 258	Job strain Demand Control
Wang (2009)	Canada	Canadian employees	Longitudinal study	4866	Job strain (several waves over seven years)
Netterström (2010)	Denmark	Employees	Longitudinal study	1146	Job strain
László (2010)	Sweden	Nonfatal myocardial infarction cases	Prospective study	676	Job strain
Aboa-Éboulé (2011)	Canada	Post-myocardial infarction	Prospective study	738	Effort–reward imbalance
Dragano (2011)	12 European countries	Male and female employees 50+ years	Longitudinal study	4380	Effort–reward imbalance
Rugulies (2013)	Denmark	Male and female employees	Prospective study	2701	Effort–reward imbalance

	Outcome measure	Main results
	Diagnosed depression	RR: 3.49 (1.93–6.32) RR: 0.83 (0.31–2.23) RR: 0.79 (0.71–0.89)
	Recurrent coronary heart disease	2.20 (1.37–3.66)
	Physicians' diagnosis	1.5 (1.2–1.8)
	Physicians' diagnosis	1.6 (0.9–2.7)
	Fatal and nonfatal ischaemic heart disease (hospitalization)	Adjusted HR age group 19–55: 1.76 (1.05–2.95) For total sample: HR 1.22 (0.75–1.96)
	Hospitalization due to ischaemic heart disease	HR low job control: 2.0 (1.1–3.6) No significant effect of job strain
	Diagnosed depression	Job strain permanently low OR: 1.0 Job strain permanently high OR: 1.5 (1.0–2.3) Improvement of Job strain OR: 1.0 (0.6–1.5) Deterioration of Job strain OR: 1.6 (1.0–2.6)
	Hospitalization or death due to ischaemic heart disease	OR women: 1.1 (0.1–3.1) OR men: 1.6 (0.4–4.9) OR men job insecurity: 2.7 (1.1–5.6)
	Cardiac death, nonfatal myocardial infarction	HR: 1.73 (1.06–2.83). Similar results for cardiac (HR: 2.81 (1.16–6.82)) and total mortality (HR: 1.65 (0.91–2.98)).
	Recurrent coronary heart disease	HR: 1.75 (0.99–3.08)
	Depression (Euro-D)	OR: 1.48 (1.23 – 1.79)
	Depression (MHI-5)	OR: 2.19 (1.12 – 4.25) Subgroup manual workers: OR: 4.08 (1.02–16.24)

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Annex 2. Psychosocial risk management: priorities in policy and practice for Europe

Stavroula Leka

The nature of work has changed dramatically due to globalization, migration, technological advances and the emergence of the knowledge-based economy. These changes have been accompanied by the increased prevalence of new and emerging types of risks to workers' health and safety, such as psychosocial risks. This annex discusses the findings from the Psychosocial Risk Management European Framework (PRIMA-EF) programme, a policy-oriented project that focuses on developing a European framework for psychosocial risk management at the

workplace and has been ongoing since 2004 through the WHO Network of Collaborating Centres in Occupational Health. It reviews the current state of the art in relation to the policy context for the management of psychosocial risks in Europe. It presents and discusses key regulatory and voluntary standards on occupational health and safety of relevance to managing psychosocial risks in the workplace that are applicable to the EU countries. Finally, it presents the priorities for action identified through PRIMA-EF.

1. Introduction

Data over the past years have documented a change in occupational safety and health trends in Europe (and elsewhere in the world). The nature of work has changed dramatically due to globalization, migration, technological advances and the emergence of the knowledge-based economy. These changes have been accompanied by the increased prevalence of new and emerging types of risks to workers' health and safety (1). Perhaps the most widely acknowledged new occupational safety and health challenges are psychosocial risks.

Work-related psychosocial risks concern aspects of the design and management of work and its social and organizational contexts that have the potential for causing mental or physical harm (2). They are linked to problems such as work-related stress and workplace violence, harassment and bullying and have a significant impact on occupational safety and health in Europe (3). According to the Fourth European Working Conditions survey, 20% of workers from the 15 countries that were EU members before 2004 (EU15) and 30% from the 12 countries joining the

EU in 2004 believed that their health is at risk because of work-related stress, while 5–6% of workers in the EU reported having been exposed to threats of physical violence either from colleagues or from others and to bullying and/or harassment at the workplace (4).

Concerning human costs, longitudinal studies and systematic reviews have indicated that psychosocial risks and work-related stress are associated with heart disease, depression, stroke, hypertension and musculoskeletal disorders, and consistent evidence indicates that high job demands, low control and effort–reward imbalance are risk factors for mental and physical health problems (5–8), thereby increasing public and private spending for increased costs on health care. Indeed, there is also a significant economic cost. In the EU15 countries, the cost of stress at work and related mental health problems has been estimated to average between 3% and 4% of gross national product, amounting to €265 billion annually (9). A recent report by the European Agency for Safety and Health at Work states that the economic cost

of illnesses related to work-related stress in France was between €830 and €1656 million; in Germany, the cost of mental disorders was estimated to be €3000 million while, in the United Kingdom, work-related stress, depression and anxiety cost in excess of £530 million (10).

The International Labour Office (ILO) has defined psychosocial risks at work very broadly in the 1980s but did not focus on a policy-oriented elaboration in a way comparable to the initiatives taken by WHO and EU. Based on the ILO's broad definition, all social and organizational aspects of the working environment potentially can have a

hazardous influence over employees' health. Consequently, several standards dealing with the social and organizational aspects of work address psychosocial risks to a certain degree. In addition to these standards, in the EU, where framework directive 89/391/EEC on the safety and health of workers at work lays down employers' general obligations to ensure workers' health and safety in every aspect related to work "addressing all types of risks", psychosocial risk management is among the employers' responsibilities to manage occupational risks in a preventive manner as well as establishing health and safety procedures and systems to do so.

2. Psychosocial risk management

International organizations as well as EU agencies have published reports and guidance on ways to deal with psychosocial risk factors (11–15) based on the risk management approach.

Risk management in occupational safety and health is a systematic, evidence-informed, problem-solving strategy. It starts by identifying problems and assessing the risk they pose; it then uses that information to suggest ways of reducing that risk at source. Once completed, the risk management actions are evaluated. Evaluation informs the whole process and should lead to reassessment of the original problem and to broader organizational learning (16). Leka et al. (17) reviewed European best practice approaches based on the risk management cycle to identify their key features. These approaches have been developed and implemented in different countries and in different sectors or organizations (in terms of nature and size). The approaches reviewed were found to have some common principles.

- Although with varied emphasis, they all follow a process of assessment, design of actions, implementation and evaluation.
- The expected outcomes are similar: they mostly relate to health, but some are more related to productivity.
- They propose participatory methods to develop interventions to tackle psychosocial factors at work. The role of a steering group formed by representatives of the employer

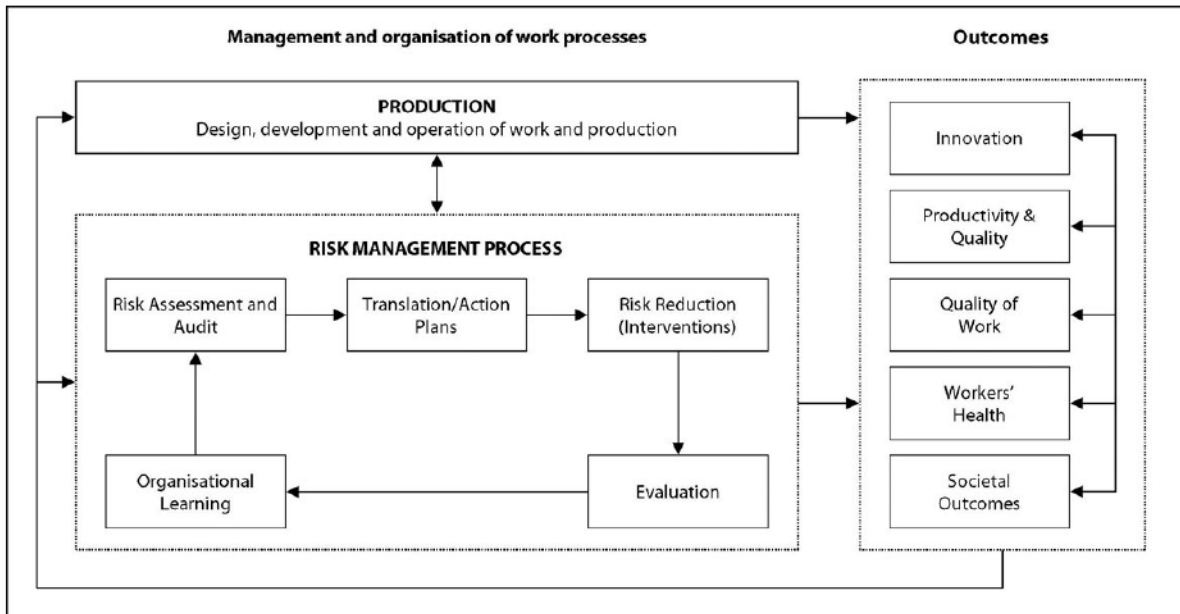
and employees is central to all approaches.

- The actions to reduce stress are tailored to the needs of each organization, and each of the methods reviewed provides a process approach and not a solution applicable to all cases.

The review also highlighted that each of the different approaches to psychosocial risk management placed varying emphasis on the various stages of the risk management process. As such, many of these best practice approaches were found to be specific to the country or culture of origin, size of enterprise and level of expertise available. Similar findings were also reported in a review of five organizational-level occupational health interventions (18).

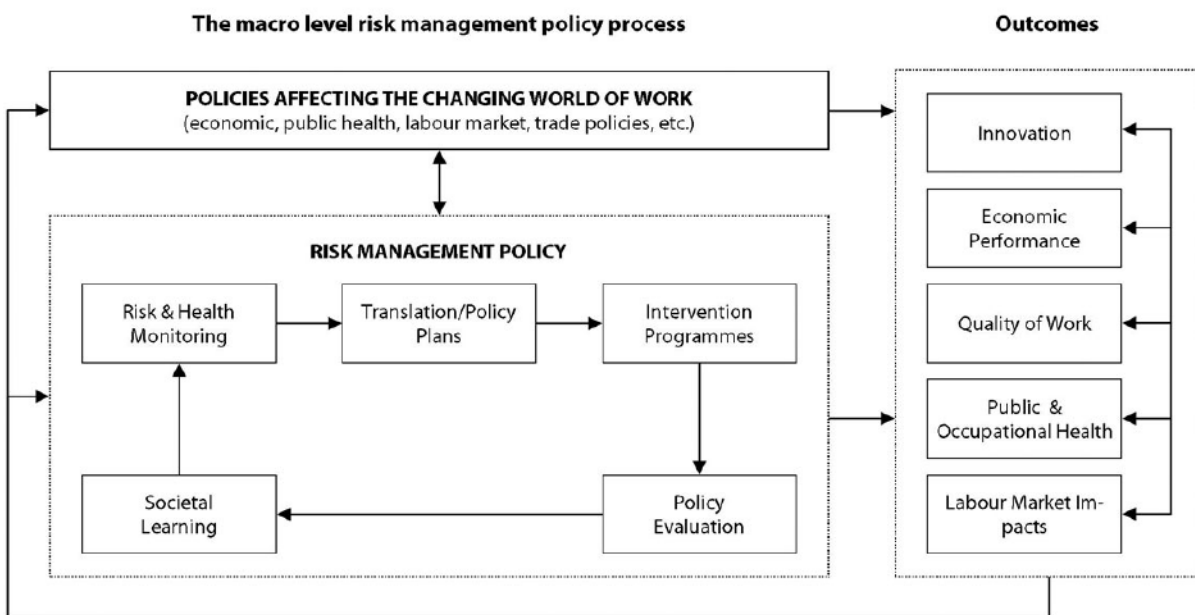
To promote a unified approach, the European Commission funded the development of PRIMA-EF, which incorporates best practice principles and methods of all existing and validated psychosocial risk management approaches across Europe. PRIMA-EF has been built on the review, critical assessment, reconciliation and harmonization of existing European approaches for managing psychosocial risks and promoting mental health at the workplace. The framework has been built from a theoretical analysis of the risk management process, identifying its key elements in logic and philosophy, strategy and procedures, areas and types of measurement and from a subsequent analysis of European risk management approaches. It is meant to

Fig. 1. PRIMA-EF model for managing psychosocial risks – enterprise level



Source: adapted from Leka et al. (21).

Fig. 2. The PRIMA-EF model for policies regarding the management of psychosocial risks



Source: adapted from Leka et al. (21).

accommodate all existing psychosocial risk management approaches across Europe. It also provides a model and key indicators that relate to the psychosocial risk management process both at the enterprise and macro levels. PRIMA-EF is intended as a framework for harmonizing practice and current methods in psychosocial risk management. It can also be used as a guidance tool for developing further methods both in Europe and globally, since it can provide a benchmark for validating new methods (19).

According to PRIMA-EF, managing psychosocial risks is not a one-off activity but part of the ongoing cycle of good management of work and the effective management of health and safety. As such, it requires a long-term orientation and commitment on the part of management. Similar to the management of many other occupational risks, psychosocial risk management should be conducted often, ideally yearly. Fig. 1 shows how psychosocial risk management is relevant to work

processes and a number of key outcomes both within and outside the workplace. It also clarifies the key steps in the iterative risk management process.

The psychosocial risk management process should incorporate five important elements: (i) declaring a focus on a defined work population, workplace, set of operations or particular type of equipment, (ii) assessing risks to understand the nature of the problem and its underlying causes, (iii) designing and implementing actions designed to remove or

reduce those risks (solutions), (iv) evaluating these actions and (v) actively and carefully managing the process (20).

However, the PRIMA-EF model is also relevant to the wider macro policy level (Fig. 2), since particular challenges in relation to psychosocial risks and their management also exist at the policy level. The next section reviews the policy context to psychosocial risk management in Europe as the backbone of the promotion of best practices at the enterprise level.

3. Policy context for psychosocial risk management at the European level

Since the framework directive was introduced, several significant developments related to managing psychosocial risks have been achieved in the EU (22). These include the European Commission's guidance on work-related stress (23), the European Framework Agreement on Work-Related Stress (24) and the European Framework Agreement on Harassment and Violence at Work (25). Also relevant to Europe, at the international level, significant developments have been WHO and ILO guidance on psychosocial risks, work-related stress and mental harassment (13,14,26–28). Policies and approaches relevant to managing psychosocial risks include both “regulatory standards”, which comprise legal regulations (such as EU directives, national legislation and ILO conventions) as well as soft or non-binding or voluntary standards developed by recognized national, European and global organizations that may take, for example, the form of specifications, guidance and social partner agreements.

Although regulatory standards set the minimum level of protection deemed appropriate by the EU that provides a level playing field for businesses operating within the large EU domestic market (29), voluntary standards covering occupational safety and health management are linked to the business case and are intended to provide organizations with the elements of an effective occupational safety and health management system that can be integrated with other management requirements and

help organizations achieve occupational safety and health and economic objectives (30). Occupational safety and health regulations have increasingly changed from a prescriptive style to a more “self-regulatory” and “goal-setting” model and have established a general framework for systematic occupational safety and health management. At the same time, new regulations have influenced the development of occupational safety and health management systems (1). These standards, like other international standards, are not intended to be used to create non-tariff trade barriers or to increase or change an organization's legal obligations. However, differences in perspectives on the suitability of voluntary standards for occupational safety and health have led to many challenges in developing such standards (31).

Three key overarching voluntary occupational safety and health standards are relevant to the EU countries, all of which are based on the plan, do, check and act process.

European Commission guidance on risk assessment at work: it states that “Risk assessment is the process of evaluating risks to workers' safety and health from workplace hazards.” The five-step approach to risk assessment is promoted: (1) identifying hazards and those at risk, (2) evaluating and prioritising risks, (3) deciding on preventive action, (4) taking action and (5) monitoring and reviewing.

ILO 2001 guidelines on occupational safety and health management systems: they

provide guidance on developing occupational safety and health management systems at both the national and organizational levels. They state that occupational safety and health management systems should contain the following elements: policy, organizing, planning and implementing, evaluation and action for improvements. An employer, in consultation with workers, should set out in writing an occupational safety and health policy. Hazards and risks to workers' safety and health should be identified and assessed on an ongoing basis. Preventive measures should be implemented in the following order of priority: eliminate the hazard or risk, control the hazard or risk at the source, minimize the hazard or risk.

The Occupational Health and Safety Assessment Series (OHSAS): this international standard on general occupational safety and health management has been developed and implemented by the British Standards Institution (BSI) in response to customer demand for a recognizable occupational health and safety management system

standard against which their management systems can be assessed and certified and for guidance on implementing such a standard. The Occupational Health and Safety Assessment Series (18001, 18002 and 18004) is compatible with the ISO 9001:2008 (quality) and ISO 14001:2004 (environmental) management systems standards, to facilitate the integration of quality, environmental and occupational health and safety management systems by organizations, should they wish to do so. The OHSAS 18001 specifies requirements for an occupational safety and health management system to enable an organization to develop and implement a policy and objectives that take into account legal requirements and information about occupational safety and health risks. The overall aim of OHSAS 18001 is to support and promote good occupational safety and health practices, including self-regulation, in balance with socioeconomic needs. The OHSAS 18004 is a revision of the previous standard intended to replace it (32).

3.1 Regulatory standards relevant to managing psychosocial risks in Europe

Table 1 presents regulatory standards indirectly related to psychosocial risks applicable to the EU countries. Even though each of these regulations addresses certain aspects of the psychosocial working environment, the terms "stress" and "psychosocial risk" are not mentioned explicitly in most pieces of legislation (22). The main example in this respect is the key EU regulatory occupational safety and health standard, framework directive 89/391/EEC on the safety and health of workers at work. Even though the directive asks employers to ensure workers' health and safety in every aspect related to work, "addressing all types of risk at source", it does not include the terms "psychosocial risk" or "work-related stress". However, it does require employers to "adapt the work to the individual, especially

as regards the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate ... developing a coherent overall prevention policy which covers technology, organization of work, working conditions, social relationships and the influence of factors related to the working environment." In this sense, there is an indirect reference to, and provision for, risks related to the psychosocial working environment. This is also the case for Council directive 90/270/EEC on work with display screen equipment, which actually refers to "problems of mental stress" in the context of risk assessment and to directive 93/104/EC on organization of working time.

Table 2 summarizes the European Commission's evaluation of the implementation of the main framework

directive in the EU15 and also its impact in relation to psychosocial risks according to the report (29).

Table 2. Evaluation of the impact of framework directive 89/391/EEC in the EU15 countries

Area of impact	Effect of implementation
Legal impact in countries	<p>In Greece, Ireland, Italy, Luxembourg, Portugal and Spain, the framework directive had considerable legal consequences since these countries had antiquated or inadequate national legislation on health and safety when the directive was adopted</p> <p>In Austria, Belgium, France, Germany, the Netherlands and the United Kingdom, the directive served to complete or refine existing national legislation</p> <p>In Denmark, Finland and Sweden, transposition of the directive did not require major adjustments since they already had national legislation in place that was in accordance with the directive</p>
Positive effects of implementation	<p>Decrease in the number of accidents at work</p> <p>Increase in employers' awareness of health and safety concerns</p> <p>Emphasis on a prevention philosophy</p> <p>Broadness of scope, characterized by the shift from a technology-driven approach towards a policy of occupational safety and health that focused on the individuals' behaviour and organizational structures</p> <p>Obligation for the employer to perform risk assessments and provide documentation</p> <p>Obligation for the employer to inform and train workers</p> <p>Increased emphasis on rights and obligations of workers</p> <p>Consolidation and simplification of exiting national regulations</p>
Main difficulties of implementation	<p>Increased administrative obligations and formalities, financial burden and the time needed to prepare appropriate measures</p> <p>Lack of participation by workers in operational processes</p> <p>Absence of evaluation criteria for national labour inspectorates</p> <p>Lack of harmonized European statistical information system on occupational accidents and diseases; although this has been addressed to an extent</p> <p>Problems in implementing certain provisions in small and medium-sized enterprises</p>
Impact on psychosocial risks	<p>Most existing risk assessment practices characterized as superficial, schematic procedures focusing on obvious risks. Long-term effects (such as mental factors) as well as risks that are not easily observed were reported to be neglected</p> <p>Concerning the practical implementation of the provisions related to risk assessment, there is hardly any consideration of psychosocial risk factors and work organizational factors</p> <p>Significant deficits in ensuring a broad coverage of preventive services relating to mental aspects were identified</p>

Source: adapted from Leka et al. (22).

Table 1. Regulatory standards indirectly related to psychosocial risks

Focus	Document
General occupational safety and health at work	Directive 89/391/EEC on safety and health at work
	C155: Occupational Safety and Health Convention (ILO), 1981
	C187: Promotional Framework for Occupational Safety and Health Convention (ILO), 2006
Workplace requirements	Directive 89/654/EEC concerning the minimum safety and health requirements for the workplace (first individual directive within the meaning of Article 16(1) of directive 89/391/EEC)
Display screen equipment	Directive 90/270/EEC on the minimum safety and health requirements for work with display screen equipment (fifth individual directive within the meaning of Article 16(1) of directive 89/391/EEC)
Manual handling of loads (back injury)	Directive 90/269/EEC on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (fourth individual directive within the meaning of Article 16(1) of directive 89/391/EEC)
Working time	Directive 93/104/EC concerning certain aspects of the organisation of working time: amended by directive 2003/88/EC
	C175: Part-time Work Convention (ILO), 1994
	Directive 97/81/EC concerning the framework agreement on part-time work
	Directive 99/70/EC concerning the framework agreement on fixed-term work
	Directive 2000/79/EC concerning the European Agreement on the Organisation of Working Time of Mobile Workers in Civil Aviation
	Directive 2002/15/EC on the organisation of working time of persons performing mobile road transport activities

Standard content

According to the Directive, employers have “a duty to ensure the safety and health of workers in every aspect related to work”. They have to develop “a coherent overall prevention policy”. Some important principles are: “avoiding risks”, “combating the risks at source” and “adapting the work to the individual”.

The Convention states that “Each Member shall, in the light of national conditions and practice, and in consultation with the most representative organisations of employers and workers, formulate, implement and periodically review a coherent national policy on occupational safety, occupational health and the working environment.”

The policy should take into account “relationships between the material elements of work and the persons who carry out or supervise the work, and adaptation of machinery, equipment, working time, organisation of work and work processes to the physical and mental capacities of the workers”.

The Convention states that “In formulating its national policy, each Member, ... in consultation with the most representative organisations of employers and workers, shall promote basic principles such as assessing occupational risks or hazards; combating occupational risks or hazards at source; and developing a national preventative safety and health culture that includes information, consultation and training”. “... the principle of prevention is accorded the highest priority.”

This directive “lays down minimum requirements for safety and health at the workplace”. It covers aspects of the physical working environment, which include “Ventilation of enclosed workplaces ..., room temperature ..., natural and artificial room lighting ...”.

This directive lays down the minimum safety and health requirements for work with display screen equipment. It states that “Employers shall be obliged to perform an analysis of workstations in order to evaluate the safety and health conditions to which they give rise for their workers, particularly as regards possible risks to eyesight, physical problems and problems of mental stress.”

This directive lays down minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers. It places responsibility on the employer to, “take care to avoid or reduce the risk particularly of back injury to workers, by taking appropriate measures, considering in particular the characteristics of the working environment and the requirements of the activity ...”.

“This directive lays down minimum safety and health requirements for the organisation of working time”. It applies to “minimum periods of daily rest, weekly rest and annual leave, to breaks and maximum weekly working time; and certain aspects of night work, shift work and patterns of work”.

The Convention requires signatories to take measures to “ensure that part-time workers receive the same protection as that accorded to comparable full-time workers in respect of: the right to organize, the right to bargain collectively and the right to act as workers’ representatives; occupational safety and health; and, discrimination in employment and occupation”.

The purpose of this directive is to implement the framework agreement on part-time work. The agreement provides “for the removal of discrimination against part-time workers and to improve the quality of part-time work”.

The purpose of the directive is to put into effect the framework agreement on fixed-term contracts. The agreement seeks to “improve the quality of fixed-term work by ensuring the application of the principle of non-discrimination; establish a framework to prevent abuse arising from the use of successive fixed-term employment contracts or relationships”.

The purpose of this directive is to implement the European Agreement on the Organisation of Working Time of Mobile Workers in Civil Aviation. It requires employers to take necessary measures “to ensure that an employer, who intends to organise work according to a certain pattern, takes account of the general principle of adapting work to the worker”.

This directive establishes “minimum requirements in relation to the organisation of working time in order to improve the health and safety protection of persons performing mobile road transport activities”.

Table 1. Regulatory standards indirectly related to psychosocial risks (continued)

Focus	Document	
Discrimination	Directive 2000/43/EC prohibiting direct or indirect discrimination on grounds of racial or ethnic origin	
	Directive 2000/78/EC prohibiting direct or indirect discrimination on grounds of religion or belief, disability, age or sexual orientation	
Equal treatment for men and women	Directive 76/207/EEC on equal treatment for men and women as regards access to employment, vocational training and promotion, and working conditions: amended by directive 2002/73/EC	
	Directive 2006/54/EC on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation	
Maternity and related issues	C183: Maternity Protection Convention (ILO), 2000	
	Directive 92/85/EC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (tenth individual directive within the meaning of Article 16(1) of directive 89/391/EEC)	
	Directive 96/34/EC on parental leave	
Informing and consulting employees	Directive 2002/14/EC establishing a general framework for informing and consulting employees in the European Community	

Source: adapted from Leka et al. (50).

Standard content

“The purpose of this directive is to lay down a framework for combating discrimination on the grounds of racial or ethnic origin, with a view to putting into effect in the Member States the principle of equal treatment”.

“The purpose of this directive is to lay down a general framework for combating discrimination on the grounds of religion or belief, disability, age or sexual orientation as regards employment and occupation, with a view to putting into effect in the Member States the principle of equal treatment”.

The directive states that “Member States shall actively take into account the objective of equality between men and women when formulating and implementing laws, regulations, administrative provisions, policies and activities”, “as regards access to employment, including promotion, and to vocational training and as regards working conditions ...”.

“The purpose of this Directive is to ensure the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation. To that end, it contains provisions to implement the principle of equal treatment in relation to: access to employment, including promotion, and to vocational training; working conditions, including pay (...).”.

The convention states that “Each Member shall, (...) adopt appropriate measures to ensure that pregnant or breastfeeding women are not obliged to perform work which has been determined (...) to be prejudicial to the health of the mother or the child (...)”.

The purpose of this directive is to implement measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or who are breastfeeding. It states that, “In consultation with the Member States and assisted by the Advisory Committee on Safety, Hygiene and Health Protection at Work, the Commission shall draw up guidelines on the assessment of the chemical, physical and biological agents and industrial processes considered hazardous for the safety or health of workers ...”. These guidelines shall also cover, “movements and postures, mental and physical fatigue and other types of physical and mental stress connected with the work done by workers ...”.

The purpose of this directive is to implement the framework agreement on parental leave. “This agreement lays down minimum requirements designed to facilitate the reconciliation of parental and professional responsibilities for working parents.”

The purpose of this directive is to establish a general framework setting out minimum requirements for the right to information and consultation of employees in undertakings or establishments within the Community. It states, “Information and consultation shall cover ... information and consultation on decisions likely to lead to substantial changes in work organisation or in contractual relations ...”.

The findings of the evaluation indicated that much still needed to be done as regards psychosocial risks such as work control and work organization, preventing unreasonably intense work pace and repetitive work. This suggested an insufficient application of some of the general principles of prevention foreseen in framework directive 89/391/EEC (22).

In 2004, 12 new countries joined the EU (and since then Croatia). In these cases, the framework directive was part of the negotiation for joining the EU and *acquis communautaire*, which meant the approximation of national laws to EU law before membership (33). The 2004 report from the European Commission did not examine the implementation of the directive in the new EU countries, and even though they would have adapted or modified their national legislations before accession, there were disparities between EU15 countries and new members in health, social and industrial relations issues (34). It is therefore important to consider different national situations, ascribable to the time available to acknowledge and implement EU directives (in the case of new members) and related policies to the political and administrative capacity of each member country that can directly affect the implementation of good practice and preventive measures at the workplace level.

Some EU countries have more specific national regulatory occupational safety and health frameworks than the key EU directives and refer to psychosocial risks and work-related stress. These countries include the Netherlands and Sweden and, more recently, Italy and the Czech Republic (35).

An interesting debate has been taking place in the scientific and policy literature about the impact of EU regulatory standards on practice, especially in managing psychosocial risk. In many cases, it has been stated that a gap exists between policy and practice due to

lack of clarity in regulatory frameworks and related guidance on managing psychosocial risks and work-related stress (22,36,37). A recent European Survey of Enterprises on New & Emerging Risks (ESENER) that covered more than 28 000 enterprises in 31 countries across Europe shed light in this debate by revealing that, even though work-related stress was reported to be among the key occupational safety and health concerns for European enterprises, only about half the establishments surveyed reported that they inform their employees about psychosocial risks and their effects on health and safety, and less than one third had procedures in place to deal with work-related stress. The findings of the survey also showed that 42% of management representatives consider tackling psychosocial risks more difficult than other safety and health issues. The most important factors that make psychosocial risks particularly difficult to deal with were reported to be “the sensitivity of the issue,” “lack of awareness”, “lack of resources”, and “lack of training” (38).

Similar findings have also been found in stakeholder surveys, which report that many stakeholders still perceive workplace hazards as primarily relating to physical aspects of the working environment. Further, where psychosocial risks and work-related stress are reported to be important occupational safety and health concerns, the perception of stakeholders differs significantly in countries in the EU (39). These differences in perception (in terms of perspectives, priorities and interests) of psychosocial risks between social actors, particularly between employers’ organizations and trade unions, are a challenge for effective social dialogue on psychosocial risk management and for the effective implementation of recently introduced voluntary standards for managing psychosocial risks such as the European framework agreements on work-related stress and on harassment and violence at work (40).

3.2 Voluntary standards directly relevant to managing psychosocial risks

In the past decade, new softer forms of policy that directly refer to psychosocial risks and their associated problems have been initiated

in the EU through increased stakeholder involvement within such frameworks as social dialogue (40). Participants in

European social dialogue – ETUC (trade unions), BUSINESSEUROPE (private sector employers), UEAPME (small businesses) and CEEP (public employers) – have concluded “voluntary” framework agreements on topics such as work-related stress (24) and harassment and violence at work (25).

The framework agreement on work-related stress aims at increasing the awareness and understanding of employers, workers and their representatives of work-related stress. The agreement clarifies the relevance of framework directive 89/391/EEC for managing work-related stress and psychosocial risks. As such, it identifies that the responsibility for implementing measures to identify and prevent problems of work-related stress and help to manage them when they do arise rests with the employer. It also emphasizes the participation and collaboration of workers (24). The framework agreement on harassment and violence at work aims to increase awareness and understanding of employers, workers and their representatives of workplace harassment and violence and to provide them with an action-oriented framework to identify, manage and prevent relevant problems (25). However, both framework agreements on work-related stress and on harassment and violence at work are broad and do not provide any guidance at the enterprise level on how to design, implement and sustain programmes for psychosocial risk management.

The European social partners monitored the implementation of both the framework agreement on work-related stress and the framework agreement on harassment and violence at work for three years. The European social dialogue committee adopted the final joint report on the implementation of the work-related stress agreement on 18 June 2008 and transmitted it to the European Commission in October 2008 (35). The aim of this report was to highlight how the European agreement has been implemented and not to provide information on or an assessment of the concrete impact it has had. The European Commission published its report on implementing the European social partners’ framework agreement on work-related stress in February 2011 (41). The report examines how national social

partners have implemented this agreement in countries and what effect this has had on national responses to work-related stress. It also reviews the current level of protection employees have from work-related stress. It examines policy developments and social partners’ initiatives in each country and highlights the value added of the agreement. It also identifies shortcomings in implementation and limitations in workers’ protection. Table 3 summarizes the key milestones achieved in countries in relation to implementing the work-related stress agreement.

As Table 2 shows, the main activities that followed the signing of the agreement were its use as an awareness-raising tool and as a means of promoting social dialogue in the area. Further, substantial joint efforts of social partners took place mostly in the EU countries that already had high awareness on work-related stress, such as Denmark, Finland, France, Netherlands, Sweden and the United Kingdom. The implementation of the agreement was reported to be a significant step forward and added real value in most countries while some shortcomings in coverage, impact of measures and the provision of a comprehensive action-oriented framework were identified. In addition, social partners in Bulgaria, Estonia, Greece, Italy, Lithuania and Malta have not reported on the implementation of the agreement (41).

In addition, the implementation of the framework agreement on harassment and violence at work was monitored from 2008 to 2010 (with the final report forthcoming). The European Social Dialogue Committee adopted the first monitoring report of the framework agreement on harassment and violence at work in June 2008 (35) and the second monitoring report in June 2009 (42). The aim of these reports is to highlight how the European agreement has been implemented and not to provide information on or an assessment of the concrete impact it has had. Table 4 presents a summary of key milestones achieved in countries in implementing the harassment and violence at work agreement.

Table 3. Results of the implementation of the European framework agreement on work-related stress

Social partners' involvement	Substantial joint efforts of social partners	Moderate or unilateral efforts of social partners	Limited social partners initiatives	No social partners initiative so far
Instrument				
National collective agreement or social partner action based on explicit legal framework	NL, FI, SE BE, DK, United Kingdom ³ FR ⁴ ICE, NO	IT	EL, RO	
Non-binding instrument based on general legal provisions	ES (agreement) LU, AT (re-commendations)	IE ecommendations) CZ, DE ²		
Mainly legislation	LV ¹	HU ¹ , SK ¹ (Stability Pact for South Eastern Europe initiated) PT ¹		LT ¹ BG, EE
No action reported or declaration with limited follow-up			CY ⁵ , PL SI	MT

Notes: Situation in early 2010. This overview necessarily simplifies differences within categories.

¹Regulation following European framework agreement.

²Joint action indirectly through statutory self-governed accident insurance bodies that have a preventive mission.

³Recognized as occupational health risk in common law.

⁴National agreement, persistent problems at company level led to government intervention.

⁵Formal, joint recognition of pertinence of the general legal framework.

Source: adapted from European Commission (41).

The main activities that followed the signing of the agreement were translation into national languages. The European Commission carried out the translation; however, in some countries the translations were made jointly and were accepted by the social partner organizations. Legislation in certain countries (specific to health and safety at work as well as general laws) adequately covered issues in relation to harassment and violence at work and, as such, the agreement was not implemented. In most cases, the agreement was used as an awareness-raising tool and to further existing initiatives: for example, the Czech Republic and Sweden.

In addition to policies relating to social dialogue, in 2008, a high-level conference

concluded the European Pact for Mental Health and Well-being, which recognized that mental health and well-being are a key resource for the success of the EU as a knowledge-based society and economy and for realizing the objectives of the Lisbon strategy for growth and jobs, social cohesion and sustainable development. It stated that “employment is beneficial to physical and mental health ...action is needed to tackle the steady increase in work absenteeism and incapacity, and to utilise the unused potential for improving productivity that is linked to stress and mental disorders” (43). The Pact also called on the European Commission to issue a proposal for a Council recommendation on mental health and well-being.

Table 4. Summary of key milestones achieved in EU countries, Iceland, Norway and Turkey in implementing the framework agreement on harassment and violence at work in 2008 and in 2009

Countries	Translation of agreement	Awareness raising	Further social dialogue initiatives	Sectoral initiatives	Development of new or revised policy or legislation
Norway, Portugal, Slovenia, Spain	Yes	Yes	Yes	Yes	Yes
Czech Republic, Denmark, Fin-land, Latvia, Netherlands, Sweden	Yes	Yes	Yes	Yes	No
Austria, Poland	Yes	Yes	Yes	No	No
Italy	Yes	Yes	No	MT	No
Hungary, Luxembourg	Yes	Yes	No	No	No
Cyprus	Yes	No	No	No	No
Germany, Iceland	Yes	No ^a	No ^a	No ^a	No ^a
Bulgaria, Croatia, Estonia, France, Greece, Lithuania, Malta, Romania, Slovakia	Yes	No report	No report	No report	No report
Belgium	No ^a	No ^a	No ^a	No ^a	No ^a
Ireland, Turkey, United Kingdom	No report	No report	No report	No report	No report

^aThe framework agreement was not implemented due to existing legislation.

In 2009, the European Parliament passed a non-legislative resolution on mental health. The resolution called on “the Member States to encourage research into the working conditions which may increase the incidence of mental illness, particularly among women”, it called on “employers to promote a healthy working climate, paying attention to work-related stress, the underlying causes of mental disorder at the workplace, and tackling those causes,” and it called on “the Commission to require businesses and public bodies to publish annually a report on their policy and work for the mental health of their employees on the same basis as they report on physical health and safety at work” (49).

International organizations such as WHO and the ILO have developed additional examples of voluntary standards in the form of guidance (and also of relevance to the EU). These include guidance on psychosocial risks at work, work-related stress, violence and mental harassment (13–15, 26–28). However, despite these developments, diseases arising due to psychosocial risks at

work had not been recognized until recently. On 25 March 2010, the governing board of the ILO approved a new list of occupational diseases that has been designed to assist countries in preventing, recording, notifying and, if applicable, compensating for diseases caused by work. For the first time, mental and behavioural disorders at the workplace have been recognized as occupational diseases that result from psychosocial hazards. The revised list includes mental and behavioural disorders as “post-traumatic stress disorder ... and ... other mental or behavioural disorders ... where a direct link is established ... between the exposure to risk factors arising from work activities and the mental and behavioural disorder(s) contracted by the worker” (28).

Table 5 presents a list of voluntary occupational safety and health standards that directly address psychosocial risks and their management. These standards directly refer to the concepts of psychosocial risk, stress, harassment and violence that apply to the EU countries.

Table 5. Voluntary occupational safety and health standards directly related to psychosocial risk management

Focus	Document	
Psychosocial hazards	Guidance: ILO, 1986 Psychosocial factors at work: Recognition and control.	
	R194 revised annex: ILO 2010 Recommendation concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases	
	WHO Healthy Workplaces Framework: 2010 healthy workplaces: a model for action: for employers, workers, policymakers and practitioners	
Work-related stress	EN ISO 10075-1: 1991 Ergonomic principles related to workload – general terms and definitions.	
	EN ISO 10075-2: 1996 Ergonomic principles related to workload – design principles.	
	Guidance: European Commission, 2002 Guidance on work-related stress – spice of life or kiss of death?	
	Guidance: European Agency for Safety and Health at Work, 2002: How to tackle psychosocial issues and reduce work-related stress	
	Guidance: WHO, 2003: Work organization and stress	
	Guidance: WHO, 2007: Raising awareness of stress at work in developing countries: a modern hazard in a traditional working environment: advice to employers and worker representatives	
	Guidance: WHO, 2008: PRIMA-EF: Guidance on the Europe-an framework for psychosocial risk management: a resource for employers and worker representatives	

Standard content

Psychosocial hazards: “interactions among job content, work organisation and management, and other environmental and organisational conditions, on the one hand, and employees’ competencies and needs on the other. Psychosocial hazards are relevant to imbalances in the psychosocial arena and refer to those interactions that prove to have a hazardous influences over employees’ health through their perceptions and experience.”

“Post-traumatic stress disorder ... and ... other mental or behavioural disorders ... where a direct link is established ... between the exposure to risk factors arising from work activities and the mental and behavioural disorder(s) contracted by the worker”.

“The psychosocial work environment includes organizational culture as well as attitudes, values, beliefs and daily practices in the enterprise that affect the mental and physical well-being of employees”.

“Examples of psychosocial hazards include but are not limited to: poor work organization ..., organizational culture ..., command and control management style ..., lack of support for work-life balance, fear of job loss related to mergers, acquisitions, reorganizations or the labour market/economy.”

“Psychosocial hazards typically are identified and assessed using surveys or interviews, as compared to inspections for physical work hazards. A hierarchy of controls would then be applied to address hazards identified, including: eliminate or modify at the source ..., lessen impact on workers ..., protect workers by raising awareness and providing training to workers ...”.

Mental stress: “the total of all assessable influences impinging upon a human being from external sources and affecting it mentally”. Mental stress is a source of mental strain: “immediate effect of mental stress within individual (not the long-term effect) depending on his/her individual habitual and actual preconditions, including individual coping styles”.

“There are four main categories of sources of mental stress: task, equipment, physical environment, social environment”.

“Impairing (short term) effects of mental stress are: mental fatigue, and fatigue-like states (i.e.: monotony, reduced vigilance, and satiation)”.

“Sources of fatigue: intensity of mental workload and temporal distribution of mental workload”.

“The intensity of mental workload is affected by the following characteristics: ambiguity of the task goals, complexity of task, requirements, serving strategies, adequacy of information, ambiguity of information, signal discriminability, working memory load, long-term memory load, recognition vs. recall memory, decision support ...”. Factors of temporal distribution of mental workload include, “duration of working hours, time off between successive work days or shift, time of day, shift work, breaks and rest pauses, changes in task activities with different task demands or kinds of mental workload.”

“This guidance provides general information on the causes, manifestations and consequences of work-related stress, both for workers and work organisations. It also offers general advice on how work-related stress problems and their causes can be identified and proposes a practical and flexible framework for action that social partners, both at national level and in individual companies, can adapt to suit their own situation. The focus is on primary prevention of work-related stress and ill-health, rather than on treatment.”

“The aim of this report is to raise awareness of work-related psychosocial issues, to promote a preventive culture against psychosocial hazards including stress, violence and bullying, to contribute to a reduction in the number of workers being exposed to such hazards, to facilitate the development and dissemination of good practice information, and to stimulate activities at the European and Member State levels.”

“This booklet provides practical advice on how to deal with work stress. It is intended that employers, managers and trade union representatives use this booklet as part of an initiative to educate on the management of work stress”. Guidance is provided on, “the nature of stress of stress at work, the causes and effects of stress, as well as prevention strategies and risk assessment and management methods (...) the role of the organisational culture in this process and the resources to be drawn upon for managing work stress”.

“The purpose of this booklet is to raise awareness for employers and worker representatives of work-related stress in developing countries. Work-related stress is an issue of growing concern in developing countries due to important developments in the modern world; two of the most significant being globalisation and the changing nature of work”.

“It provides guidance on the European framework for psychosocial risk management (PRIMA-EF) and concerns the management of psychosocial risks at the workplace, aiming at the prevention of work-related stress, workplace violence and bullying. Such a framework, bringing together a number of key issues in the area and providing guidance on them, has so far been lacking and is necessary for employer and worker representatives to take effective action to address the issues of concern.”

“The overarching aim of this document is the promotion of the translation of policy and knowledge into practice.”

Table 5. Voluntary occupational safety and health standards directly related to psychosocial risk management (continued)

Focus	Document
Work-related stress	Framework Agreement on Work-related Stress, 2004 European Social Partners – ETUC, UNICE (BUSINESSEUROPE), UEAPME and CEEP
	European Pact for Mental Health and Well-being, 2008 Together for mental health and well-being
	European Parliament resolution T6-0063/2009 on mental health, Reference 2008/2209(INI), non-legislative resolution
Violence and harassment	Guidance: WHO, 2003: Raising awareness of psychological harassment at work
	Guidance: ILO, 2006: Violence at work
	Framework Agreement on Harassment and Violence at Work, 2007 European Social Partners – ETUC, BUSI-NESSEUROPE , UEAPME and CEEP

Source: adapted from Leka et al. (50).

Standard content

“Stress is a state, which is accompanied by physical, psychological or social complaints or dysfunctions and which results from individuals feeling unable to bridge a gap with the requirements or expectations placed on them.”

“Identifying whether there is a problem of work-related stress can involve an analysis of factors such as work organisation and processes ..., working conditions and environment ..., communication ... and subjective factors ...”. “If a problem of work-related stress is identified, action must be taken to prevent, eliminate or reduce it. The responsibility for determining the appropriate measures rests with the employer.”

“Employment is beneficial to physical and mental health...action is needed to tackle the steady increase in work absenteeism and incapacity, and to utilise the unused potential for improving productivity that is linked to stress and mental disorders”.

The resolution calls on “the Member States to encourage research into the working conditions which may increase the incidence of mental illness, particularly among women”; it calls on “employers to promote a healthy working climate, paying attention to work-related stress, the underlying causes of mental disorder at the workplace, and tackling those causes” and it calls on “the Commission to require businesses and public bodies to publish annually a report on their policy and work for the mental health of their employees on the same basis as they report on physical health and safety at work”.

“Psychological harassment is a form of employee abuse arising from unethical behaviour and leading to victimization of the worker It can produce serious negative consequences on the quality of life and on individuals’ health ...” “This booklet aims at raising awareness ... by providing information on its characteristics ...”.

Violence at work (3rd edition) examines aggressive acts that occur in workplaces ... bullying, mobbing and verbal abuse. It provides information and evidence about the incidence and severity of workplace violence in countries around the world ... evaluates various causal explanations and details some of the social and economic costs. It evaluates the effectiveness of workplace anti-violence measures and responses such as regulatory innovations, policy interventions, workplace design that may reduce risks, collective agreements and various “best practice” options worldwide.

“Harassment and violence are due to unacceptable behaviour by one or more individuals and can take many different forms, some of which may be more easily identified than others. The work environment can influence people’s exposure to harassment and violence.”

“Raising awareness and appropriate training of managers and workers can reduce the likelihood of harassment and violence at work. Enterprises need to have a clear statement outlining that harassment and violence will not be tolerated. This statement will specify procedures to be followed where cases arise..”

Apart from the voluntary standards presented above, in some EU countries efforts have been made to address psychosocial risks and work-related stress through similar national approaches. For example, in the United Kingdom, the Health and Safety Executive has developed the Management Standards approach to help reduce the levels of work-related stress reported by workers (44). The Management Standards covers six key areas of work design that, if not properly managed, are associated with poor health and well-being, lower productivity and increased sickness absence (45). The results from implementing this approach show that there has been increased focus on preventing stress

and sickness absence in the United Kingdom as well as an increase in organizational policies and procedures in place to deal with these issues (46).

However, throughout Europe, researchers, practitioners, government bodies, social partners and organizations differ in awareness and understanding of psychosocial risks, work-related stress, harassment and bullying. Although in some countries there appears to be widespread awareness of the nature and impact of these issues as well as agreement among stakeholders on giving them priority for promoting health, productivity and the quality of working life, this situation is not reflected across the enlarged EU (21).

3.3 Effectiveness of existing standards for managing psychosocial risk

Based on this review on regulatory and voluntary standards, some observations can be made. The first is that there is lack of clarity and specificity on the terms used, and this might result in confusion. The second is that, although the various standards are based on related paradigms very much rooted in the philosophy of occupational safety and health legislation, very few provide specific guidance on psychosocial risk management to enable organizations (and especially small- and medium-sized enterprises) to manage psychosocial risks successfully and in a preventive manner. The third is whether existing standards have actually fulfilled expectations in practice in psychosocial risk management. Recent findings suggest that, although European employers consider occupational safety and health legislation as a key driver in addressing occupational safety and health issues, it has been less effective for managing psychosocial risks (38,47).

In relation to voluntary standards, there is the question of whether they have been effective

in supporting the implementation of existing legislation and in guaranteeing quality with regard to the essential requirements established by European policies. Even though the OHSAS 18000 series and the ILO 2001 guidelines on occupational safety and health management systems specifically refer to the psychosocial working environment, this reference is very brief, and a preventive framework for action that organizations can adopt in practice is lacking, suggesting limited usability of these standards. For example, the only place the psychosocial environment is mentioned in OHSAS 18001 is under terms and definitions, where 3.8 defines ill health as “an identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work-related situation”. Finally, the data presented in the introduction of this annex on the prevalence and impact of psychosocial risks, work-related stress, violence, harassment and bullying indicate that the impact of existing standards has not overall been the one anticipated.

4. Priorities for action

Particular challenges in relation to psychosocial risks and their management exist both at the enterprise level and at the macro policy level. At the enterprise level, systematic and effective policies are needed to prevent and control the various psychosocial risks at work, clearly linked to companies' management practices. At

the national and European levels, the main challenge is to translate existing policies into effective practice by providing tools that will stimulate and support organizations to undertake that challenge, thereby preventing and controlling psychosocial risks in workplaces and societies alike.

Based on the overall findings of the PRIMA-EF programme and through policy-oriented work with different stakeholder groups (experts, researchers, social partners, key European and international organizations and networks), several key findings and priorities for action have been identified as presented in Table 6.

Some of the key findings identified through PRIMA-EF are discussed here. These relate, for example, to the existence of appropriate

infrastructure for managing psychosocial risks across EU countries and stakeholder dialogue, sensitization and engagement (39). Social dialogue is a useful form of communication among social partners that plays a critical role in developing and implementing initiatives for psychosocial risk management at the macro as well as the organizational level and hence should be promoted, especially in the countries joining the EU since 2004, where existing social dialogue structures are weak (40).

Table 6. Key PRIMA-EF findings

Area	Priorities for action
Awareness-raising and infrastructure development	<p>Awareness-raising on psychosocial risks across the enlarged EU and across stakeholders: psychosocial risk management should represent a higher priority in national and international agendas</p> <p>Developing appropriate infrastructure (including occupational health services) for assessing and managing psychosocial risks in all EU countries and especially where it is lacking</p> <p>Developing and promoting specific training programmes on psychosocial risk management for stakeholders, for occupational health and safety professionals and for health and safety inspectors</p>
Monitoring and indicators	<p>Actions are needed to improve the monitoring of psychosocial risk management at different measurement levels (and especially at employer level)</p> <p>Psychosocial risk management and preventive action have been a neglected aspect of monitoring and have been missing in the indicators defined so far. It is considered important that indicators of that type be further developed</p>
Stakeholder involvement and social dialogue	<p>Addressing stakeholder perceptions and promoting social dialogue: social dialogue plays a critical role in developing and implementing initiatives for managing psychosocial risk at the macro as well as the organizational level and hence should be promoted, especially in the countries joining the EU since 2004, where existing social dialogue structures are weak</p>
Policy and standards	<p>Focus on policy-level interventions: the evaluation of the policy process should allow the strengths and weaknesses of both the policy plan and the implementation process to be assessed and provide the basis for societal learning. Also, better transference of best practice between ministries within countries, between countries as well as between international organizations will lead to the development of effective tools that could be implemented and evaluated effectively</p> <p>Developing a European standard for psychosocial risk management: Such a standard should be based on existing guidance from the European Commission, WHO, the ILO and national best practice examples and represent a reference point for organizations. It is not essential that the end point be certification but rather clear pan-European guidance</p> <p>Promoting a approach to psychosocial risk management inspired by corporate social responsibility: such an approach to psychosocial risk management (seeing legal requirements as the floor and not as the ceiling) is based on the recognition that a company cannot be responsible externally without being responsible internally towards its own workforce</p>
Interventions	<p>Capacity- and competence-building within organizations and management and extending this to the macro level to include policy-makers</p> <p>Comprehensive stress management techniques: developing a comprehensive approach to managing and evaluating interventions for work-related stress and workplace violence and bullying by incorporating the use of a multimodal intervention approach (focusing on both the individual and the organization)</p> <p>Further integration of process issues into the evaluation of interventions: how to effectively translate intervention action plans into successful interventions</p> <p>Development of the business case: linking the business case more strongly to responsible business practices, including a focus on the social well-being and health of employees</p>

Source: adapted from Leka et al. (19).

In addition, awareness-raising and training in managing psychosocial risk by using tools and guidelines (such as the ones developed through this project) should be promoted to ensure both an increase of national capabilities and the minimization of the existing gap between policy and practice in this area. It is important that specific training programmes on psychosocial risk management be developed and promoted for stakeholders, for occupational health and safety professionals and for health and safety inspectors.

The importance and impact of policy interventions for managing psychosocial risks has been largely ignored in the mainstream academic literature (22,48). There are a few complementary European policy approaches to addressing psychosocial risks in the workplace in the form of legislation, social partner agreements or European standards. Some of these have been outlined in European documents such as the European Commission's guidance on work-related stress (23), the European standard (EN ISO 10075 – 1&2) on ergonomic principles related to mental workload (CEN, 2000) and the European Parliament resolution of 19 February 2009 on Mental Health (49). These approaches are based on different but related paradigms, which might lead to confusion and misinterpretation. Standards for addressing psychosocial risk management in the workplace therefore need to be developed based on a framework unifying these approaches.

Several priorities have been identified based on PRIMA-EF for the future of psychosocial risk management and the promotion of mental health in the workplace in Europe. Since its development, PRIMA-EF has been used in three ways through follow-up initiatives: first, to develop training in the area that will be promoted to different stakeholders and will be incorporated in national training systems in EU countries; second, to develop a guidance standard on psychosocial risk management in the workplace that will be promoted to enterprises; and third, to develop similar frameworks in countries outside Europe through the WHO Network of Collaborating Centres in Occupational Health.

Following on the development of PRIMA-EF, harmonizing EU approaches, and since there is currently no recognized standard or official benchmark for good practice in psychosocial risk assessment and management at the European level, a group of key stakeholders, including the PRIMA-EF consortium (to which the authors belong), WHO, the European Agency for Safety and Health at Work, the European Trade Union Confederation and the Engineering Employers Federation together with the British Standards Institution worked on the development of a publicly available specification (PAS) for psychosocial risk management (50). As with every standard development, stakeholder consultation and input were crucial in the final adaptation of PAS1010.

PAS1010 is rooted in PRIMA-EF and hence incorporates key principles and elements of all established EU approaches (such as the Health and Safety Executive's Management Standards approach in the United Kingdom) and standards (such as EU directives and social partner agreements) for psychosocial risk management as well as relevant international standards (such as ILO and WHO guidance). The guidance has been written so that it is also consistent with other guidance and specifications that are used by organizations to manage occupational safety and health but expands on the specific needs for managing psychosocial risks. The framework and approach adopted is compatible with that found in the ILO OSH-MS, ISO 31000, BS OHSAS 18001; BS OHSAS 18002; BS 18004 and ANSI Z 10, all of which are based on the risk management paradigm. The guidance and recommendations in PAS1010 are intended to be incorporated into any occupational safety and health management system. It is intended to apply to all types and sizes of organizations and to accommodate diverse geographical, cultural and social conditions (50).

PAS1010 aims to provide clarity in relation to both terms and best practice. Nevertheless, its actual impact will depend on a range of factors such as, for example, the awareness and willingness of social partners to address psychosocial risks, social dialogue practices in different countries and the availability of infrastructure and support systems. In

addition, while PAS1010 aims to promote a number of best practice principles, it remains to be seen whether it will actually promote ownership of psychosocial risk management at the organizational level and trigger the implementation of more evidence-informed solutions as intended. To ascertain whether this will actually be the case, research will be needed in the uptake and operationalization of PAS1010 at the enterprise level (50). Work is currently under way to develop training on the basis of PAS1010 for enterprises, which will be widely disseminated through various stakeholder and business groups. This may provide the platform on which to conduct further research on the use of PAS1010 and its outcomes.

The Psychosocial Risk Management e-Training (PRIMAeT) aims at promoting awareness and good practice in psychosocial risk management in the workplace by means of a virtual learning environment. It seeks to improve the accessibility of training provision for psychosocial risk management for managers and employers, especially those in small- and medium-sized enterprises, employees and their representatives as well as occupational health and safety professionals. The training

Although several initiatives have been implemented at the policy level in the EU that are relevant to managing psychosocial risks, challenges continue to exist at both the enterprise level and the macro policy level. At the enterprise level, systematic and effective policies are needed to prevent and control the various psychosocial risks at work, clearly linked to companies' management practices. At the national and European levels, the main challenge is to translate existing policies into effective practice by providing tools that will stimulate and

course is currently being piloted across Europe. Following the pilot, the programme will be modified and finalised. The training programme will be made available in different language versions. The option of providing the course through a blended learning model (combining e-learning and face-to-face training) will also be explored.

Finally, the unifying best practice European approach that is promoted through PRIMA-EF should be disseminated at the EU level to promote the translation of knowledge and policy into effective practice at the enterprise and macro levels.

Since the development of PRIMA-EF, interest from other countries has been building up. The PRIMA-EF WHO guide has already been translated into other European languages and into traditional Chinese. It is currently being translated into Japanese by the Japanese NIOSH and into Portuguese by a Brazilian WHO collaborating centre in occupational health. PRIMA-EF is also being promoted by WHO as best practice within its global framework for healthy workplaces (27). There are plans to promote and evaluate the use of the framework in an international context.

5. Conclusions

support organizations to undertake that challenge, thereby preventing and controlling psychosocial risks in workplaces and societies alike. The development of new initiatives and implementation must be based on processes involving social dialogue and consultation among all key stakeholders. Further combined efforts among all key stakeholders are important to ensure that existing policies and knowledge are translated into effective practice across the EU to address psychosocial risks as key priorities in the modern workplace.

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Annex 3. The Work Security Index

Ellen Rosskam

The magnitude and nature of the widespread changes that have taken place in the world of work during the past 25 years, combined with the difficulties of regulating the health effects of such changes, suggest that a new approach to monitoring the health and well-being of working people is needed. The 21st century presents an opportunity to move beyond traditional definitions of occupational health and safety towards an approach based on citizenship-based rights and principles of universalism (1) in which all countries in the WHO European Region would have a solid social and economic floor through which no citizen can fall, in contrast to social safety nets, since nets have holes. Worker protection in the 20th century focused on the provision of social security, labour-based contingencies, labour development and its reproduction and compensation to injured or ill workers. A new proposed paradigm focuses on social protection, citizenship-based rights, a move away from entitlements to rights and making all forms of work secure. Monitoring approaches that are based on this perspective would by definition encompass a wide variety of factors that are demonstrated to contribute to the social gradient in relation to work-induced ill health.

An expanded concept for understanding and defining occupational health and safety is proposed, based on the fundamental right of workers to engage in employment that does not adversely affect their health or well-being and for these rights to be universally guaranteed. Work security is a concept that attempts to move beyond the traditional engineering, medical and technocratic definitions of and approaches to occupational health and safety towards one based on a universalistic rights-based approach. Generally speaking, work security refers to safe and secure working conditions, encompassing occupational health, safety and the working environment. It includes

the provisions that are needed to ensure the protection of workers' health and includes: limits on working time, paid maternity leave, provision of paid vacation, provision of paid sick leave, protection of disabled workers from discrimination and restrictions on night work, as well as workplace health and safety committees or departments and the availability and provision of workers' compensation. In its larger definition, work security is a fundamental right of all working people and includes (2):

- protection against accidents and illness at work through health, safety and environmental regulations;
- protection from discrimination based on disabilities, sex, race, religion or ethnicity;
- protection from violence, harassment, stress and unsociable hours;
- rights to employment and income security;
- paid maternity leave, vacation time and sick leave;
- reasonable work scheduling and work organization;
- the right to social supports such as access to health care, education and child care;
- limits on hours of work and on night work;
- limits on working age;
- rights to compensation benefits, pension security, absenteeism protection and long-term care;
- protection through legislation, enforcement and inspections;
- the right to association;
- the right to collective bargaining;
- the right to refuse unsafe work;
- the right to participate through mechanisms such as joint labour-management health and safety committees and other forms of voice representation;
- the right to know about work-related hazards; and
- the right to protection for whistleblowers.

A work security approach needs to be embedded in a system that monitors

performance on protecting workers' health beyond the level of the individual workplace because systems of surveillance typically do not exist at the workplace level, and workplace-level monitoring by itself does not contribute to national-level measures of worker protection. Monitoring could take place at various levels, such as the local as well as national levels.

The ILO's Socio-Economic Security Programme (3) developed 7 pioneering indexes as a new way for governments to measure their performance on the provision of social and economic security to their working population. The Work Security Index (WSI) (2) provides a new way for governments to determine how well they protect the health, safety and well-being of their working population. It is an attempt to create a benchmarking system for identifying how well a country is performing at the national level relative to other countries. (For a more detailed description of the WSI and its

indicators, see *Economic security for a better world* (3).)

Each index is built on three types of indicators:

- input indicators: designed to capture national and international adherence to principles of that form of security, such as laws, rules and international conventions, etc.;
- process indicators: mechanisms and procedures through which principles and rules can be realized, such as by agencies, expenditure, labour inspectors and collective agreements; and
- outcome indicators: measures of achievement reached by effective actual input and process measures and, where possible, differentiated by gender-specific information.

Fig. 1 lists the WSI indicators and describes them.

Table 6. Key PRIMA-EF findings

Input	Process	Outcome
ILO Convention 1: Restricting Hours of Work	Public expenditure on workers' compensation as % of GDP	Fatal work-related injury rate (per 100 000 workers)
ILO Convention 103: Maternity Protection	Existence of occupational safety and health board or committee	Work-related injury underreporting
ILO Convention 132: Annual Holidays with Pay	Earnings-related cash benefits for injured workers	% of the population covered for work injury
ILO Convention 155: Occupational Safety and Health		Average paid leave adjusted for % wage employment
Interventions		Average reported working time
ILO Convention 161: Establishment of Occupational Safety and Health Services	Source: Rosskam (4).	
ILO Convention 159: No Discrimination Against Disabled Workers		
ILO Convention 171: Restricting Night Work		
National law on occupational safety and health		
National law on paid leave		
National law on disability		
National law on paid ma-ternity leave		

The input indicators include 11 international labour standards and corresponding national laws. Countries are scored according to whether the government has ratified the relevant international labour conventions corresponding to individual indicators. Countries are also scored according to whether they have national laws on any of the individual indicators irrespective of ratification of the corresponding international conventions.

There are three process indicators. One is the level of government expenditure on workers' compensation. As would be expected, expenditure on workers' compensation is higher where GDP is higher, although the generosity of benefits per capita and per injury or illness varies greatly among countries. Higher government expenditure on workers' compensation does not necessarily indicate a higher rate of accidents, injuries or illnesses or a weaker or relatively unhealthy population. Higher government expenditure on workers' compensation usually indicates an operative structure in the country through which workers can make claims and a national list of compensable occupational injuries and diseases. Conversely, a low level of government expenditure on workers' compensation does not usually indicate a low level of accidents, injuries and diseases. It is more indicative of a low GDP, which acts as a barrier to the government paying benefits to injured or sick workers. It also may indicate a lack of monitoring, surveillance, reporting and notification structures. Low expenditure on workers' compensation may further indicate the absence of trade unions or other organizations giving voice to workers, such that workers may not be aware that a compensation system exists or of how to use it. Low government expenditure on workers' compensation also may reflect a preponderance of low-risk activities.

The second process indicator is the existence of disability or invalidity benefits provided to workers injured in work-related accidents. Where workers are not provided with disability or invalidity benefits following a work-induced accident or illness, social and/or economic decline are almost guaranteed to follow. The mere provision of benefits does not, however, indicate whether the benefits are sufficient or even whether they

are commensurate with the incident. This indicator in the WSI provides only the most rudimentary piece of information related to disability or invalidity benefits: whether they exist or not. The third process indicator is the existence of labour-management, tripartite or bipartite occupational safety and health boards or committees: the most basic mechanisms to monitor and ensure the implementation of national laws and regulations to protect workers' health. In countries where such mechanisms exist, usually by legal mandate, problems often are solved at both the local and national levels through the use of social dialogue and consultation. Workers are healthier when they are able to participate in decision-making, and active workforce participation in managing occupational safety issues has been shown to lead to a significant decrease in accident rates (5–7).

An accurate means of evaluating a country's performance in protecting workers' health is to examine what actually takes place compared with what should take place. The outcome indicators were developed based on this premise. Work-related fatality data, as reported by several countries, were used as an outcome indicator. For countries lacking such data, fatal injury rates were estimated based on neighbouring countries of a similar size and with similar conditions, within a given region. Another outcome indicator included the percentage wage employment, used as a proxy measure for the percentage of the population guaranteed coverage by workers' compensation for work injury, due to data limitations. Another outcome indicator was working time, an important predictor of ill health among working people. Measuring average working time indicates the degree to which workers are being overworked and exploited. Damage to physical and mental health has been reported to occur when work exceeds 45 hours per week (8–10). A combination of expressions of working time was used. The last outcome indicator is the average number of annual paid vacation days in a country, corrected by the relative size of wage employment. The entitlement to paid vacation days is a measure of the importance a government gives to workers' physical and mental well-being. Workers in countries more oriented towards social benefits are entitled to and take more paid vacation days than those

in countries with few or no social benefits.

The WSI was constructed from information collected on 95 countries in all regions of the world. The data sources included a variety of databases, published reports and other published documentation, information from various ILO country and regional offices and consultations with different types of experts at ILO. Due to large differences in social and economic structures and data availability, two sets of countries were used – industrialized and industrializing – which were combined at a final stage. Roskam (4) discusses the limitations of the WSI.

The WSI comprises country scores that are then used to rank countries or to group them in clusters. Four country groupings, or clusters, were used. Countries are considered “pacesetters” when they scored high in the input, process and outcome subindexes. The “pragmatists” cluster includes countries that score high on outcome measures, but score low on input and/or process measures. The “conventionals” are countries that score high on input and/or process measures but low on outcome measures. The “much-to-be-done” cluster includes countries that score low on input, process and outcome measures. (For the method used in calculating the indexes, see: Bonnet F et al. A family of decent work indexes. *Int Labour Rev.* 2003;142:2.)

The 95 countries in the WSI were also ranked according to their level of performance (3). Examining a country’s ranking on the WSI alone can be misleading, since it may not necessarily reflect how well or poorly that country may be performing on individual measures of work security. Identifying groups of countries with similar performance on work security measures provides a means of recognizing countries’ efforts, even if they rank low in the WSI. Conversely, a country may rank relatively high in the WSI, while closer examination may show that its actual performance in worker protection (reflected by poor outcome performance) is weak.

A country is considered to provide good coverage on work security when coverage includes: (1) the whole population, (2) the entire working population or (3) the working population with exceptions. Lesser degrees of coverage are considered to be unsatisfactory. Analysis of the WSI revealed that more than two thirds of the 95 countries have

unsatisfactory levels of worker protection. The most critical cases included the lowest-income countries in eastern Europe, Africa and Asia. Pacesetter countries were found only in western Europe. Fig. 2 shows the performance in protecting workers’ health and well-being for the countries in the WHO European Region included in the WSI.

The WSI is a new type of monitoring tool for governments to measure their performance and make international comparisons. An index built on indicators and data from numerous countries can be useful to countries unable to collect reliable data related to work security, as may be the case in the countries of the former USSR. Countries with similar social and economic conditions in the same region can use the WSI to extrapolate the level of worker protection they are achieving in the absence of their own data. Local or national governments can use the WSI to evaluate their performance in protecting workers’ health, identify areas of strength and weakness and compare themselves with other local or national governments. The WSI can help policy-makers to identify how best to target efforts for improving work security by identifying where allocations might make the greatest impact.

The WSI pacesetter cluster comprises entirely western European countries – all having strong legislation, effective mechanisms and good outcome measures. Luxembourg, Sweden and Finland provide the strongest protections. Common to pacesetter countries are strong national laws and regulations plus effective mechanisms to ensure that the laws are implemented, all provide workers’ compensation as a universal right and at a level adequate to protect affected workers’ basic security, all provide disability or invalidity benefits to injured workers, all ensure that voice mechanisms exist in the form of health and safety boards or committees and all have good outcome measures.

Eastern Europe and the Americas are the regions with the best-performing industrializing or transition economies (countries classified as pragmatists). These countries have relatively weak legislation related to work security or weak mechanisms to ensure the application of the laws and yet achieve good results measured by the

outcome measures. In eastern Europe, these results are most noticeable in countries that are part of the EU27.

By contrast, among the 95 countries in the WSI, more than two thirds have unsatisfactory levels of work security. These countries are classified as conventionals or Much-to-be-done, in almost equal numbers, indicating that most countries do not provide the minimum measures of work security to their working populations. The conventionals could be considered average performers, with satisfactory laws or regulations and/or satisfactory mechanisms for implementing those laws, but they perform poorly on the outcome measures. The most critical cases are in the category of much-to-be-done, which includes the most deprived countries from Africa, Asia and the eastern part of the European Region, including Albania, Armenia, Bulgaria, Kazakhstan and the Republic

of Moldova. Until the fall of communism, countries in the eastern part of the European Region had a history of strong legislation on the various aspects of work security. However, even where legislation still exists, the outcome measures are poor in the most deprived countries in that subregion.

Laws and the mechanisms meant to ensure their implementation are insufficient to protect workers' health. Achieving successful outcomes appears to also require strong government commitment, leadership, good governance, accountability, basic employment security, some form of basic income security and strong collective voice. Using this powerful evidence-informed country monitoring tool, the WSI can help policy-makers and other stakeholders identify strengths and weaknesses in protecting workers' health and well-being.

Fig. 2. Work Security Index results for countries in the WHO European Region

		High score on outcome			
		High score on input and process Pacesetter countries		Low score on input and process Pragmatist countries	
Regions					
Eastern Europe and central Asia	Slovenia			Czech Republic Estonia Hungary	Latvia Lithuania Poland Slovakia
Western Europe	Belgium Denmark Spain Finland France Germany Iceland	Italy Luxembourg Netherlands Norway Portugal Switzerland Sweden	Austria Greece	Ireland United Kingdom	
		Low score on outcome			
		High score on input and process Conventional countries		Low score on input and process Much-to-be-done countries	
Regions					
Eastern Europe and central Asia	Azerbaijan Belarus Croatia Kyrgyzstan	Russian Federation Tajikistan Ukraine	Albania Armenia Bulgaria Georgia Kazakhstan	Republic of Moldova Romania Turkmenistan Uzbekistan	
Western Europe					

Source: chart adapted for this publication; original charts and country groupings in Annycke et al. (3).

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Annex 4. Research and workplace interventions using participatory action research methods

Ellen Rosskam

1. A short review

Participatory action research methods to improve work organisation and worker health

A variety of catalysts can lead to changes in work organization. Informally collecting information, talking with workers and employers, observing work processes, examining workers' compensation or absenteeism records or simply getting an impression by listening to what people say in the workplace can indicate that something may be causing health problems. Formal research is a useful tool that often helps trade unions, management and policy-makers to guide changes in work organization. Research can provide the empirical foundation needed to lead to policy-level changes or to create organization-level change. Collaboration between workers, management and researchers is often helpful to identify or describe worker health issues. Participatory action research is a method appropriate for the epidemiological study of health issues in worker populations and is consistent with an examination of jobs or workplaces as entire systems as opposed to viewing workers' health as the outcome of individual behaviour or the result of single work tasks. Several examples are described below in which participatory action research studies led to concrete, measurable and long-term improvements in worker health and working conditions.

Investigations in the participatory action research context incorporate a systematic

effort to generate knowledge about specific conditions that can influence changes in a given situation (such as in a community or a workplace). The term action in participatory action research indicates that the research is meant to contribute to change efforts or accompany action by the participants, such as workers and their representative trade unions, or change for employers through an interactive research-learning process. Participatory action research in the workplace is a process in which the people experiencing a work-related problem participate with researchers in deciding the focus of knowledge generation, in collecting and analysing information and in taking action to improve the conditions or resolve the problem entirely (1).

Participatory action research researchers question domination and dominating research structures and relationships, including how actual organizational structures, processes and practices shape and influence how decision-makers relate to those not holding decision-making power. This questioning is particularly relevant to work-related research given the complex nature of worker-management relationships. At its core, participatory action research in work-related health issues promotes worker participation in decision-making in the workplace, which implies an inherent redistribution of power between workers and management. As with any research method, limitations exist (2,3).

2. Participatory action research for workplace-based research: a multidisciplinary method

Few problems can be resolved in today's organizations through the use of any single academic discipline; the complex nature of work calls for integrating ideas and methods from a variety of disciplines. Participatory research is based on the same philosophy (4).

The domain of participatory action research includes the principles of democracy, participation, reflection and empowerment of groups seeking to improve their social or work situation (4). To achieve what can be realized, participatory action research involves participants in the research process, enabling them to give and get valid information, make choices freely – including the choice to participate in the research or not and to generate their own commitment to the results of the research.

A key aspect of participatory action research that distinguishes it from other research methods lies in the attitudes and beliefs of the researchers: specifically, how they view the locus of control in the research process. Participatory researchers view society and social change from a perspective that recognizes that change sometimes occurs through conflict between groups and that society often benefits some at the cost of others, particularly people who are socially and economically marginalized. The primary purpose of participatory action research has thus often been to encourage the most poor and vulnerable groups in society and

those who work with them, to generate and control their own knowledge based on the assumption that knowledge generates power and that people's knowledge is central to social change. Research aimed at government-imposed standards rarely includes participation of the workers meant to benefit from such standards. In this respect, participatory action research is distinct because of its inherent participation- and intervention-based orientation as well as its in-built focus on change from within a workplace (5). Participatory action research has been used extensively in organizational development in industry and by management with a systems perspective focusing on the fit, or lack of fit, between work and family, or between the organization and implementation of work and people's psychosocial needs. In his review of the various levels of work organization interventions and the different stages of prevention, Landsbergis (6) found that effective interventions tend to be those involving "systems approaches", which focus on primary prevention (such as changing the causes of work stress, including work schedules and workload) and include secondary and tertiary prevention (such as programmes to help employees with symptoms of stress or who have become ill from job stressors), and that effective interventions also include meaningful participation of employees, increasing their job control and ensuring support from top management.

3. The challenge of existing methods in occupational health research

Although research using action-oriented research methods in work-related health studies does exist, the epidemiology and occupational health literature remain dominated by studies applying purely quantitative methods. In the "scientific paradigm", the gold standard is attributed to research methods that lead to generalizing research findings to large groups and methods that are meant to remove "biases" through randomized case-control trials.

The scientific literature based on purely

quantitative cross-sectional or cohort studies lacks participation by workers and a focus on strategies for change. This is a key reason that such studies seldom contribute directly to improving workers' health and working conditions or provide employers with the benefits that come with attention and commitment to worker health and well-being (such as reduced absenteeism, increased and improved productivity, improved workplace morale, reduced insurance costs and a healthier society overall). Few researchers

include a link between research and action in occupational health research. Researchers in participatory action research reject the separation of theory from practice and view science as best advanced when theory and practice, research and action, are linked together. Participatory action research breaks the mould of conventional research in its process of reflection and action, carried out with people rather than on them, using a bottom-up approach, where local knowledge and priorities form the basis for the research and planning process.

4. Examples of occupational health studies using participatory action research methods

Antonio et al. (7) highlighted how the problems in the working environment of the San Francisco Municipal Railway workers affected the health of San Francisco transport workers. Collaboration between the trade union, management and researchers on a study of hypertension and work stress among San Francisco bus drivers led to a unique intervention programme aimed at improving the difficult working conditions bus drivers face. The outcomes demonstrated how research findings can be combined with union organizing efforts to achieve sustainable improvements and policy-level changes. The research and interventions focused on the working environment and not on individual behaviour, and the trade union and researcher participatory action research aimed at the structural and not individual level.

Hanley et al. (8) documented the workplace health and safety experiences of domestic workers using a intervention study based on participatory action research in Quebec, Canada. A total of 80% of Quebec domestic workers are women, with the proportion rising to 93% among foreign workers who migrate to Quebec for domestic work. The work is considered low-status, characterized by informal employment relationships and cash payments. Few studies of domestic workers' working conditions addressed occupational health and safety. The study showed that migrant domestic workers are exposed to psychosocial hazards at work relating to lack of control, insecurity, isolation, racism and abuse as well as to unfavourable ergonomic and environmental conditions.

The United States National Institute for Occupational Safety and Health has made ensuring the link between research and practice a key focus in its present programme of work. The participation of stakeholder groups in the research process helps to ensure the relevance of the issues addressed and the questions asked to investigate those issues. The interpretation of findings also can be conducted with input from the stakeholder groups that could complement researchers' analyses.

Domestic workers have been shown to have overall poorer mental and physical health than women in other occupations. The investigation revealed striking findings relating to workplace accidents, illnesses and abuse in an occupation widely viewed as "safe and clean women's work". Action and interventions resulting from the study led to a report that generated interest from community groups, policy-makers and the media, a policy campaign and, ultimately, legislative change to ensure protection for domestic workers in case of accident or illness on the job.

Hugentobler et al. (9) used participatory action research methods to implement a longitudinal multi-method research and intervention project investigating occupational stress, psychosocial factors and health outcomes. Their findings were combined with interventions to improve worker health. Israel et al. (10) used participatory action research methods to better understand and reduce the negative effects of work-related stress. Schurman (11) used a participatory action research approach to study stress in an automobile factory. The process was designed to improve the system's performance by redesigning work organization and to contribute to the body of scientific knowledge at the same time.

Casey & Roskam (12) described how union organizing and collaborating with labour-supportive researchers using a study designed based on participatory action research led to significant changes aimed at reducing injuries among hotel room cleaners in San Francisco. The study and interventions focused on the

effects of downsizing, cost-cutting and the resulting intensification of workloads on the health of hotel workers – particularly after 2001 – and the organizing efforts of union members in San Francisco around these issues. By carrying out a housekeeping workload study, the local union was able to help workers successfully negotiate a new contract that made important advances towards alleviating the effects of workload on housekeepers.

Roskam (13) applied participatory action research methods to examine the occupational health of airport check-in workers and the management practices that contribute to and create the conditions of work in that occupation. The process and findings led to direct improvements in various airports and contributed to policy changes in multiple countries (14, 15). The study revealed that work-induced musculoskeletal disorders were widespread and resulted in disability, lost work time and reduced job performance. Nearly 80% of the workers surveyed lived with severe chronic pain in multiple places of their body at once, often losing sleep due to pain. Mental distress, violence and aggravated musculoskeletal disorders emerged as serious issues caused by the high-demand

Successful change initiatives described in the aforementioned examples have drawn on the strength and power that exists in collective bargaining agreements, labour–management partnerships and participatory action research. Perhaps most important is that strong collective voice is the singularly most important element found among the various interventions described. To date, few initiatives for changing work organization have succeeded in the absence of strong collective voice. Strong laws and regulations are essential and need to be respected and enforced but alone are not enough to protect workers' health – other mechanisms are needed to ensure the implementation of statutory laws and regulations (for details, see the section on the Work Security Index in this report). Without statutory regulations, enforcement, financial incentives and strong collective voice, workers' health remains conspicuously absent from most management agendas.

and low-control nature of the job, work shift irregularity, lack of protective mechanisms against violence, policies to make senior-level workers redundant to reduce costs, job deprofessionalization and the absence of worker participation in any level of organizational decision-making or work design. Management externalized the costs of work-related injuries and illnesses, leaving the costs to be borne by workers and their families.

The study demonstrated the importance of looking at check-in work as an entire system of interacting factors. Through publications, videos, the media, public seminars, labour inspectorates, local unions and airport management, changes resulting from the investigation were widespread. Direct and indirect actions included redesign of check-in work stations, tripartite negotiations, introduction of greater and more frequent task variety, passage in 2005 of an International Air Transport Association resolution limiting all checked baggage to a maximum of 32 kg, publication and worldwide dissemination by the International Transport Workers' Federation (ITF) of a report with policy recommendations for collective bargaining agents (15), among other positive changes at the international, national and local levels.

5. Conclusions

Participatory action research is important to research and to policy work. Some epidemiologists would challenge participatory action research as being not objective; others do not involve themselves in participatory action research because intervention studies are often more difficult to carry out than purely quantitative research, often take more time and may cost more. Analysing an existing data set can be easier than talking to groups of people, working to build consensus and aiming for real change to improve workers' health. Nevertheless, intervention-based research and its adequate evaluation are precisely how public health and occupational health advance. For research in occupational health to not remain in an ivory tower, policy makers, epidemiologists and other researchers, employers, trade unions, nongovernmental organizations and other stakeholders stand only to gain from encouraging and supporting joint research conducted together with working people.

Part 2. Case study: investigating and taking action against stress and fatigue among civil aviation workers

1. International civil aviation industry: background

This study highlighted the changes worldwide in civil aviation workers' working conditions as well as changes in their social and economic conditions between 2000 and 2007.

The ITF and its affiliates represent 800 000 civil aviation workers worldwide. The first Conference of the ITF's Civil Aviation Section was held in October 1949 when the jet-propelled civil aircraft was still a few years away from being commercially exploited and air travel for ordinary people was a far-off prospect. Following 1945, existing aviation affiliates demonstrated their long-term perspective by pressing the ITF to take a close look at both safety and working conditions in the aviation industry.

During the following 60 years, scientific and technological progress made civil air transport a crucial part of the transport mix. Technological progress brought positive changes but also many challenges for aviation employees and profoundly affected their working conditions. The real problem however, came with deregulation, starting at the end of the 1970s, eventually leading to the disappearance of thousands of high-quality jobs along with most of the legacy airlines that provided them. Neoliberalism dictated that the industry should privatize and outsource as many of its operations as possible. Time proved this strategy to be ineffective and potentially dangerous – a 2005 study by the International Civil Aviation Organization found that too much liberalization has led to the loss of control over safety.

In the intervening decades, the neoliberal and deregulation agenda did not lose force. International competition, mergers, alliances and cost-efficiency strategies are still being pursued relentlessly, increasing the already intense pressure in an industry that is not only characterized by cut-throat competition but is also exposed to external factors such as security concerns and economic crises. All these factors have directly affected jobs and the working conditions of those employed in the industry.

Low-cost carriers continue to push the limits of what their workers and passengers will accept. Local airports and service providers are forced to lower their charges and to provide flexible and cheap labour or face the threat of abandonment by such carriers. These companies have exploited their workers to the limit in their goal of lowering running costs and advertising the lowest fare. The drive to continually lower fares continues, despite concerns about the implications for both passenger and crew safety raised by trade unions.

Between 2000 and 2007, global air passenger traffic, air freight volume and revenue increased. Yet while the industry grew, civil aviation workers faced a steady decline in their conditions, in all regions. This study on stress and fatigue examined the reasons for this decline in the context of changes within the industry. The study showed that stress and fatigue have become extremely serious problems for civil aviation workers. The international union committed to take action with this scientific evidence in hand (16).

2. The study using participatory action research methods

At their 2006 International Congress, ITF delegates reported a serious and noticeable increase in stress and fatigue among their members, an increase that had become progressively worse, in particular since 11 September 2001. To determine whether this was a perception or a real phenomenon, and

if real, what were the causes and what could be done to ameliorate the situation, the ITF together with an independent research team undertook a global study through all of its affiliated trade unions in 116 countries in Africa, Asia and the Pacific, the Middle East, North America, Latin and South America

and Europe to examine changes between 2000 and 2007 that might have led to what appeared to be a dramatic and global increase in stress and fatigue (16). Using participatory action research methods (2), changes between 2000 and 2007 were examined among cabin crew, ground staff workers and air traffic service workers (ground staff workers included: check-in workers, baggage handlers, security workers, caterers, cleaners, ticket sales and call centre workers and ramp workers). Empirical results were based on survey-based assessments obtained from union affiliates in all regions (data collection one step removed) and not from the 800 000 individual members of the ITF's global affiliates. Three separate comparable questionnaires (one for each occupational group) were used, each translated into 9 languages. A total of 105 questionnaires were received from 116 countries.

The year 2000 was used as a baseline to give an idea of conditions before 11 September

2001. The findings revealed a disturbing picture of a steady decline in conditions faced by civil aviation workers in all three occupational groups, in all regions, between 2000 and 2007. The results showed that stress and fatigue among civil aviation workers became global in nature between 2000 and 2007, and the pandemic worsened progressively since 2000.

A dramatic and global increase in stress and fatigue in civil aviation workers is not a condition that would occur naturally. The conditions that continually adversely affected the health and well-being of civil aviation workers were created by objective factors, many of which could have been improved with concerted agreement and action. The decline in conditions appeared to be largely a direct outcome of the events of 11 September, 2001 and the major changes in the industry that it triggered. The findings appeared quite consistent globally.

3. Striking findings revealed by the study

1. For cabin crew, air traffic service and ground staff workers around the world, long or odd hours, physical work, lack of rest and mental work were the factors cited most often as contributing to fatigue.
2. Overtime work among cabin crew was strongly associated with mental fatigue. The conditions that were found to provoke severe fatigue among cabin crew members caused them to have concerns about their ability to provide service to passengers and react to potential safety and security threats.
3. Working under constant pressure increased progressively between 2000 and 2007.
4. Significant associations were observed between constant pressure due to heavy workloads and burnout (feeling completely used up) among all three groups.
5. A majority of air traffic service workers had to work very fast under constant pressure and felt emotionally drained and burned out at the end of the workday.
6. Among all three groups, half of all representatives reported increases in intimidation by management between 2000 and 2007.
7. The majority of cabin crew, air traffic services and ground staff representatives reported increases in unmanageable workloads and in disciplinary charges brought against workers by managers between 2000 and 2007.
8. Regions with expanding civil aviation markets, such as Asia, experienced an increase in precarious forms of work and a decrease in stable employment between 2000 and 2007, evidenced by:
 - increased job outsourcing; and
 - a substantial increase in the percentage of short-term contracts (contract of less than one year).
9. Regions with "mature" or "saturated" markets, such as Europe and North America, were significantly associated with:
 - precarious conditions of work;
 - increased job demands;
 - a lack of support; and
 - emotional fatigue.

These factors, known to contribute to chronic stress, job strain and fatigue, are made worse in a climate of downsizing, where workers fear losing their jobs.

10. The higher frequency of using temporary and contract labour in 2007 (compared with 2000) was associated with a higher level of reported overall work stress among all three groups in all regions.
11. Regular shift work patterns decreased among cabin crew and ground staff workers, in all regions, between 2000 and 2007:
 - in 2000, 42% of European ground staff workers had regular shift patterns versus only 36% in 2007;
 - no (0%) ground staff workers in North America had regular shift patterns in 2000 nor did any by 2007; and
 - no (0%) ground staff had regular shift patterns in 2007 in the Middle East.

Where regulation is stronger (such as in Europe), unions can have stronger influence in shift assignment and rostering. The findings indicated the need for stronger regulation in all regions and greater union influence in the organization of work.

12. 80% of cabin crew members reported an increase in flight hours between 2000 and 2007.
13. All 3 groups were the victims of significant increases in all types of abusive behaviour between 2000 and 2007.
14. Salaries, promotion prospects and job security were lower in countries with no perceived option of an established collective bargaining process or with no established collective bargaining process.
15. Health and safety conditions got worse for all three groups, in all regions, between 2000 and 2007:
 - the general decline in health and safety conditions for cabin crew was accompanied by a worsening of conditions related to overwork, maternity protection, and harassment, among other factors;

- half of all representatives of all three groups, in all regions, reported significant increases in the number of cases of work-related stress between 2000 and 2007; and
- all three groups reported significant increases in work-related injuries and illnesses, pain, sleep disorders and absenteeism between 2000 and 2007.

16. Between 2000 and 2007, cabin crew averaged only 6.5 hours of sleep per night during layovers. Chronic sleep deprivation has implicit negative implications for worker, public and passenger safety and increases the risk of accidents.
17. Between 2000 and 2007, cabin crew members spent up to 4 hours travelling one way from airport to hotel or hotel to airport to use employer-required low-cost hotels. A direct consequence of 11 September 2001 was the introduction of new security measures in airports around the world, requiring more time to get through an airport than in 2000. Workers' rest time between flights, however, did not increase. Travel time to and from airports plus earlier airport arrival greatly reduced the number of hours cabin crew members had for rest and sleep between flights, increasing fatigue, risk of accidents on board aircraft and possible slower reaction time in case of an emergency incident.
18. Effort reward imbalance was found among all three groups in all regions.
19. Gender inequality improved very little among all three groups in all regions. 80% of all affiliates reported that, between 2000 and 2007, there had been no change in the gaps between men's and women's salaries and wages when performing the same job.
20. Various legislative changes were made between 2000 and 2007 that facilitated the overall downward progression of conditions of work for civil aviation workers.

4. Actions and interventions

This study has been valuable in describing the changes in civil aviation workers' working conditions and social and economic security conditions worldwide but also has broader importance. The findings are helping the ITF and its global affiliates develop a global campaign and policy recommendations addressing the common concern of stress and fatigue in a way that focuses effectively on the specific needs of each of the three different groups of civil aviation workers. Global policy recommendations are expected soon. A global campaign will illustrate the fact that the problems are not confined to one country or group of countries; they are experienced in all countries, in all parts of the world, as shown by scientific evidence.

Many unions are using the study findings as part of other materials and activities at the national level. A global campaign would aim to support those activities, to encourage action in countries not currently involved in such initiatives and to focus international attention. National campaigns would benefit from the effects of major worldwide coordinated actions. Other solutions, such as

international minimum standards, will require pressure at the relevant international levels at which the ITF operates. The study findings are being used to emphasize the need for close and active union collaboration, strong organizing efforts, solidarity and campaigning at the local, national, international and regulatory levels.

The investigation showed that, between 2000 and 2007, civil aviation workers in all three occupational groups in all regions of the world were confronted with increasingly difficult conditions of work, largely triggered by the events of 11 September 2001. ITF's global affiliates demonstrated courage, commitment to their jobs and co-workers and a sense of solidarity even when faced with unacceptable, potentially dangerous, continually declining and highly stressful conditions across the industry. As of 2011, the end of the decline appears nowhere in sight. The study revealed that the conditions of labour need to be improved, and improved significantly, both for civil aviation workers and for public safety worldwide.

Fig. 1. Countries in the WHO European Region that responded to the study questionnaires

Cabin crew	Ground staff	Air traffic services
Austria, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Italy, Norway, Poland, Portugal, Russian Federation, Serbia, Spain, Sweden, Switzerland, Turkey, United Kingdom	Austria, Bulgaria, Denmark, France, Italy, Norway, Spain, Sweden, Switzerland, Turkey	Austria, Finland, France, Germany, Iceland, Italy, Netherlands, United Kingdom, Uzbekistan

Source: Rosskam et al. (16).

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Annex 5. Brief overview of the current situation of occupational health services in south-eastern Europe

Jovanka Bislimovska

1. Introduction

The south-eastern Europe subregion today is a broader term than the traditional “Balkans”, related not only to the geographical concept but also historical, social and political (Stability Pact for South Eastern Europe). The Stability Pact for South Eastern Europe was an institution aimed at strengthening peace, democracy, human rights and the economy in the countries of south-eastern Europe from 1999 to 2008. It was replaced by the Regional Cooperation Council in February 2008. The Stability Pact provided a framework to stimulate regional cooperation and expedite integration into European and Euro-Atlantic structures. The Regional Cooperation Council replaced the Stability Pact because it is more “regionally owned” than the Stability Pact, which was driven

more by outside partners such as the EU. The countries included are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Republic of Moldova, Montenegro, Romania, Serbia and the former Yugoslav Republic of Macedonia,. Turkey is also included in the south-eastern European countries in various organizations and networks such as: South East European Cooperation Process – symbol of the common will of the countries of the region to improve cooperation among themselves and to bring lasting stability to south-eastern Europe, the South East European Network on Workers’ Health providing regional collaboration of the occupational health institutions and WHO national focal points in south-eastern Europe under the WHO Regional Office for Europe.

2. Main features of the subregion

South-eastern European countries, beside the national specificities, have some main common features including the geographical and historical background. In the past two decades south-eastern European countries as a society at large and the structures of economies have experienced major transitions in socio-political and economic views. Many south-eastern European countries have been affected by war, war conflicts, refugees, civil victims, political crisis, and trade and political sanctions. One of the major changes was the introduction of the market economy with privatization, fragmentation of enterprises with increasing number of small- and medium-sized enterprises causing the dramatic reduction of employment opportunities.

The social, political and economic changes following the global economic crisis have strongly and seriously affected working life

and on people’s lives in the various countries.

South-eastern European countries face economic, social and political challenges to ensure decent work conditions and income growth prospects for a large number of inactive, unemployed or informally employed workers. High informal and low-productivity employment coupled with extremely high unemployment point to low job security and protection, especially in industrial and agricultural sectors. New “pictures” of working life demand adapting and further developing occupational health systems, policies and services in south-eastern Europe in a new direction. However, one of the major common features of south-eastern Europe was, and still is, the strong political orientation towards EU accession, with the development of national policy and legislation in all sectors, including occupational health and safety, and aligning

with the requirements of the EU *acquis communautaire*. Different initial conditions, coupled with unique economic and political developments during the first years of transition, led to specific outcomes of the transition process in the individual south-eastern European countries.

During recent decades, Bulgaria and Romania

became EU countries in 2007 and Croatia in 2013, Montenegro, the former Yugoslav Republic of Macedonia and Turkey became EU candidate countries and Albania, Bosnia and Herzegovina, Serbia and Kosovo (in accordance with Security Council resolution 1244 (1999)) became potential candidates in different stages of EU accession.

3. Basic data

According to the data obtained from the national statistical offices in the countries, south-eastern Europe without Turkey includes more than 50 million total population, and the active labour force (age 15–64 years) is almost 23 million. Including Turkey, the total population is close to 120 million and consequently more than 50 million workers from nine countries in the subregion have the right to just, healthy and safe working conditions and equal access to occupational health services.

High and persistent unemployment in the subregion varies widely, being lowest in

Romania at 7.3% (1) and highest in the former Yugoslav Republic of Macedonia at 31.8%, Bosnia and Herzegovina at 43%, and Kosovo (in accordance with Security Council resolution 1244 (1999)) 46% (national statistical offices, 2011).

The wide variation between the south-eastern European countries is registered in economic (six-fold difference in GDP per capita), social and health (life expectancy, infant mortality, etc.) indicators as one of the mean features of the subregion.

4. Policy, legislative strategy and programmes

Health policy

The health system and policy in most of the south-eastern European countries that were part of the former Yugoslavia, was based on social and public health approaches in health policy, related to the local health service model, with community governance. In contrast, the health system in the eastern countries (Bulgaria and Romania) as well as Albania was based on a Semashko model related to a centrally planned and governed health system. Actually, the health policy model is intermediate between a market-driven system and public service provision. The Štampar public health and primary health care model has, in different variations, been the leading principle, with countries simultaneously adjusting their public health systems according to EU directives with a view to their future accession to the EU (2).

In this political, economic and social context, health care systems in south-eastern Europe faced and still face multiple challenges of

improving access, quality and efficiency within the continual health care reforms. Governments' objectives are to obtain health-care systems based on long-term stability, sound governance and an appropriate institutional capacity among the key actors in the health-care system. They want to see health-care providers operating in a reformed health-care environment, focused on the patient as the most important element in the health-care system. Health ministries, with their departments for health services and public health (or preventive health care) and often also for health insurance, constitute the highest level of governance. During the past decade, the process of renewing health legislation in most south-eastern European countries was realized with new health care laws and, in many countries, with separate public health laws. The World Bank and the International Monetary Fund financially supported extensive reforms in health legislation and in many activities in south-

eastern Europe, such as transposing the EU directives into national legislation.

In south-eastern Europe, the improvement of the health systems and implementation of the priorities of public health areas were also identified and reconfirmed through the regional collaboration at the Health Minister's Forum in Dubrovnik in 2002 and in Skopje in 2005 and at the Third Health Ministers Forum: Health in All Policies in South Eastern Europe: A Shared Goal and Responsibility will in Banja Luka in 2011.

The South-eastern European Health Network was established in partnership with the WHO Regional Office for Europe and in the framework of the Social Cohesion Initiative of the Stability Pact, acknowledging the challenges related to the health needs of vulnerable populations in south-eastern Europe. The health and safety of working populations is considered a priority area, and the WHO and the ILO initiated a project to build the capacity of the health systems in south-eastern European countries to address occupational health risks.

Policy and legislation on occupational health and safety

The occupational health and safety policies and practices need to be reoriented and upgraded to respond to the new challenges and needs of modern working life. Such upgrading requires strong contributions from labour ministries and health ministries, from institutes of occupational health, expert and academic communities as well as from social partners, employers and trade unions. Occupational health and safety have been shown to contribute substantially and positively to the health and safety of working people by preventing and controlling traditional and new occupational health hazards (stress at work, unhealthy work organization and equipment – threats to human health and well-being). Simultaneously, they have provided support for maintaining and promoting work ability, productivity and overall socioeconomic development in the countries. On the other hand, poor working conditions and occupational accidents and diseases cause substantial economic loss, amounting to some 4% of GDP, thus stealing limited resources that are needed for developing the countries in the process or after transition. The governments and policy-makers should make more effective use of occupational health approaches and practices to support overall socioeconomic development, the development of modern working life and

social and economic dimensions in their national development programmes. Policies and strategy documents – occupational health and safety strategy and action plan and relevant legislation – such as occupational health and safety laws, labour laws, labour inspection laws and specific national programmes are the key instruments of occupational health and safety policy at the national level. The EU accession process through the transposition of the principles of the *acquis communautaire* into national occupational health and safety legislation and ILO guidance on ratifying ILO conventions on occupational health and safety, drawing up national occupational health and safety profiles and national occupational health and safety policies and programmes are the main external drivers in occupational health and safety policy development.

According to the EU and ILO directions in the subregion, the occupational health and safety legislation (occupational health and safety law, labour laws and labour inspection laws) have been revised and harmonized in the past decade, with wide variation within the south-eastern European countries. Weak implementation of the legislation in the field is still one of the greatest problems in the subregion.

Strategies and action plans in occupational health and safety

In accordance with the basic principles of the European Community Strategy for Health and Safety at Work 2007–2012, with its main aims of reducing work-related accidents by

25% in 2007–2012 and strengthening health protection and promotion at the workplace, several south-eastern European countries prepared national occupational health and

safety strategies (Bulgaria 2008–2012, Romania 2008–2013, Serbia 2008–2012, Albania 2009–2013, Montenegro 2010–2013 and the former Yugoslav Republic of Macedonia 2011–2015) or national occupational health and safety programmes (Croatia 2009–2013), followed by relevant action plans.

In Turkey, the Ministry of Labour and Social Security with the Directorate-General of Occupational Health and Safety is responsible for adopting and implementing the EU *acquis communautaire* in occupational health and safety, as in most south-eastern European countries. To assist the Directorate-General of Occupational Health and Safety in this activity, the European Commission funded a two-year project *Upgrading Occupational Health and Safety in Turkey (ISAG)*, which was implemented from 2004 to 2006. Towards this end, a *National Policy on Occupational Health and Safety 2006–2008* was prepared in parallel to a *Strategic Management and Business Plan for 2006–2010*. The national policy goals are: to reduce the number of occupational accidents, to improve the system of diagnosing occupational diseases and to expand the public technical support services in occupational health and safety.

In Bosnia and Herzegovina, a strategic document on occupational health and safety is not yet available.

In Bulgaria, the government and social partners regard the need to develop and observe a consistent national occupational health and safety policy as an effective measure for conducting the economic reforms in the country. The directions for occupational health and safety reforms were specified in guidelines for the development of workplace occupational safety and health activities until 2006, and occupational health and safety provision was designated as the basic objective of the new social policy of the government to harmonize with the EU strategy for workplace health and safety.

In Romania, based on EU documents, the Ministry of Labour, Social Solidarity and Family and the Ministry of Public Health established the concrete objectives for a national safety and health at work policy in accordance with the *European Community Strategy for Health and Safety at Work 2007–2012*.

Under the National Institute of Public Health – National Centre for Monitoring Risk, Occupational Health and Working Environment, the programmes (with their objectives, activities, methods, indicators for monitoring and evaluation, national and local responsibilities etc.) are implemented by directorates and authorities of public health – occupational health offices. The main objectives are established every year through a ministerial order that sets up the provisions for each programme.

Occupational health and safety legislation

Occupational health and safety has been one of the most dynamic areas in legislation, but many issues still have to be addressed to implement and enforce it effectively.

The principles of the *acquis communautaire* have been transposed in occupational health and safety law in almost all south-eastern European countries, including controlling and avoiding risks at work and primary prevention and protection of workers' health and safety, enforcing employers' obligations for risk assessment and protecting safety and health at work, providing information and training workers on safety and health, organizing preventive and protective services and collaborating with workers' representatives in occupational health and safety. Workers'

obligations include using safe working practices, complying with safety and health regulations, applying information provided by employers on observed risks and hazards and collaborating with employers on issues of safety and health.

Here we broadly analyse the occupational health and safety legal framework. Most south-eastern European countries have adopted comprehensive, modern occupational safety and health acts in accordance with EU Framework Directive 391/89/EEC and the basic ILO occupational health and safety Convention No. 155. Bosnia and Herzegovina and the Republic of Moldova, however, still have traditional labour protection laws essentially covering only occupational safety

and make the case for an integrated approach to occupational health and safety through a comprehensive, integrated legal framework.

In fact, many south-eastern European countries have made progress in the direction of fully integrating occupational health and safety functions in their national legislation, ensuring compatibility with EU and ILO occupational health and safety framework

Occupational health service policy and legislation

The policies for occupational health and safety vary widely within the subregion. Almost all south-eastern European countries have ratified ILO Convention 161 on occupational health services. An elaborated occupational health and safety policy, as requested by this Convention, is currently available in Croatia, Montenegro and the former Yugoslav Republic of Macedonia. In Kosovo (in accordance with Security Council resolution 1244 (1999)), such a policy is still lacking, while Albania has included it in its national occupational health and safety strategy on occupational safety and health at work. Although it is usually the employer's obligation to organize services and access to them by workers, the provision of services has been regulated by the respective health care law. The funding and contracting of services has been stipulated by general health insurance law or by a special occupational health insurance law (for example, Croatia).

The countries of south-eastern Europe have a strong tradition of providing occupational health and safety to whole working populations. Their organizations and professionals have remarkable experience and competence in providing these services. Given the far-reaching recent structural changes, this comprehensive former occupational health care system has largely disappeared, and services, as far as they continue to exist, are partly under-utilized.

The current situation in the new EU countries requires strong international guidance and support to reach the standards prescribed by the EU accession process. Unfortunately, some national capacity has been weakened during the transitional period in the past decade. It is very important to improve the education and training of young people in occupational health. Future projects should

regulations and best practice in the field. The changes in legislation not only mean new rules to be applied but also a new approach and change of mentality and culture in occupational health and safety practice. Enforcing the new regulations requires both time and increases in material and human resources.

be considered by responsible stakeholders in these new EU countries, including Bulgaria and Romania, to monitor and evaluate the impact of EU accession on improving workers' health.

In Bulgaria, the national insurance system covers sickness, pensions, unemployment and occupational accidents and diseases. The national health system separately covers public health services. Unfortunately, occupational health services are not covered by these regulations. Most laws on occupational safety and health follow EU directive 89/391/EEC. Since occupational health and safety are now largely provided by private services, several important sectors, such as agriculture or self-employed business, are not covered.

The south-eastern European countries originating from the former Yugoslavia had a well developed occupational health and safety system incorporating both curative and preventive aspects. Again, this strong tradition of public health has been weakened during the transition period. For example, the number of occupational physicians decreased dramatically because many of them changed their role to general practice in the general health system. As a consequence of this mix of public and/or private suppliers, quality management is often inappropriate.

It can be concluded that coordination of laws and regulations implemented by the Ministries of Labour and of Health is a crucial prerequisite of improving occupational health and safety performance and efficacy. In Albania, the occupational health and safety system is controlled by the Ministry of Health on the one hand (through the Public Health Office, the Public Health Institute and 36 districts) and by the Ministry of Labour on

the other hand (through the Inspectorate of Labour). In Turkey, the influence of the Ministry of Health on occupational health and safety is restricted to small enterprises,

ILO has supported the countries (regionally and individually) with specific projects and programmes aiming at developing policies, regulations, institutions and human resources for occupational safety and health. The ILO Regional Office for Central and Eastern Europe provides a range of services including capacity-building activities, technical and advisory missions and conferences for exchanging information and experience among the constituents and

ILO promotes the ratification of its conventions. All countries have ratified the key occupational safety and health conventions. The total number of ratified ILO conventions varies across south-eastern

but it currently aims at integrating basic occupational health and safety into the primary health care, in collaboration with the Ministry of Labour and Social Security.

5. ILO guidance

with external experts. The main substantive areas are employment policies, institutional development including strengthening of inspection, national programming for occupational safety and health and development of national occupational safety and health profiles, as well as Decent Work Programmes. ILO supports countries' occupational safety and health development through four different mechanisms.

ILO conventions

European countries (from Albania 51 to Serbia 71). Kosovo (in accordance with Security Council resolution 1244 (1999)) has not yet ratified any conventions, since it joined the ILO only recently.

Occupational safety and health country profiles

In Budapest in June 2007, the Stability Pact Initiative for Social Cohesion in cooperation with the ILO, WHO, International Organization of Employers and the European Trade Union Confederation organized a South East European Tripartite Seminar to strengthen the social dialogue for improving occupational health and safety in south-eastern Europe. The first phase of this project assessed the occupational safety and health situation in

each participating country and entity, based on comprehensive terms of reference (in an occupational safety and health country profile format, designed by the ILO). So far, 11 south-eastern European country profiles are available, providing a host of valuable information, much of which has been collected and presented in this form for the very first time.

This is one of the very important ILO and country activities. Its basic aim is to promote decent work both as a production factor and an essential element in developing a culture of safe and fair work and employment by improving activities to be conducted jointly by ILO and its tripartite partners in the country. Specific targets are:

- creating jobs – an economy that generates opportunities for investment, entrepreneurship, skills development, job creation and sustainable livelihoods;
- guaranteeing rights at work – to obtain recognition and respect for the rights of workers; all workers, and in particular disadvantaged or poor workers, need

Decent Work country programmes

- representation, participation and laws that work for their interests;
- extending social protection – to promote both inclusion and productivity by ensuring that women and men enjoy working conditions that are safe, allow adequate leisure time and rest, take into account family and social values, provide for adequate compensation in case of lost or reduced income and permit access to adequate health care; and
 - promoting social dialogue – involving strong and independent workers' and employers' organizations is central to increasing productivity, avoiding disputes at work and building cohesive societies.

ILO technical support

The ILO also provides technical support through various activities, such as the Integrated Labor Inspection Training System and training workshops for inspectors. In 2009, the ILO launched a project entitled

Enhancing Labour Inspection Effectiveness, targeting Albania, Montenegro and the former Yugoslav Republic of Macedonia under the cooperation agreement between Norway and the ILO.

6. WHO activities for implementing the Global Plan of Action on Workers' Health in south-eastern Europe

WHO occupational health programmes

Countries in south-eastern Europe face challenges in protecting the health and safety of their workers in times of globalization and transitional economy. Occupational risks are among the top 10 factors contributing to the burden of disease in the WHO European Region. Thus, an integrated approach is needed to reduce health inequalities. In this context, the World Health Assembly endorsed the WHO Global Plan of Action on Workers' Health in May 2007. It addresses different aspects of workers' health, including primary prevention of occupational risks, protection and promotion of health at work, addressing work-related social determinants of health and improving the performance of health systems. The WHO Regional Office for Europe is providing support to Member States for implementing the Global Plan of Action on Workers' Health in the European Region.

The South-eastern European Network on Workers' health was established at an international workshop on Strengthening the Health System to address Occupational Health Risks in South-eastern Europe held in the former Yugoslav Republic of Macedonia in 2006. Experts from eight south-eastern European countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Romania, Serbia and the former Yugoslav Republic of Macedonia) were the founding members. Turkey joined the Network in 2007.

In 2009, the Network provided necessary support for the successful mission of Jorma Rantanen, a WHO consultant, to the south-eastern European countries for assessing occupational health situations and formulating common recommendations. At the Second Meeting of the National

Focal Points on Workers' Health in Struga in September 2009, the Network was recognized as a driving force in raising the awareness of policy-makers in south-eastern Europe occupational health issues. Compared with the situation in 2006 when the Network was first launched, the visibility and awareness of occupational health in the governments of south-eastern European countries have improved significantly.

The WHO Regional Office for Europe provided technical and policy support to the south-eastern European countries through the biennial collaborative agreement mechanism as a priority, recognizing their needs and human resources capable of making real progress in occupational health policies. In 2008–2009, WHO and national counterparts implemented various biennial collaborative agreement activities for implementing the Global Plan of Action on Workers' Health in Albania, Croatia, Montenegro, Serbia, the former Yugoslav Republic of Macedonia and Turkey. Examples of achievement include developing a national action plan in Croatia and a national occupational health and safety strategy in Montenegro, realizing a study on vulnerable groups in the former Yugoslav Republic of Macedonia and introducing the principles of a basic occupational health and safety system in Albania, Serbia and Turkey. The Network provided an excellent opportunity for collective and coordinated implementation of biennial collaborative agreement activities sharing information and experiences.

The Regional Office and the WHO country offices promoted the introduction of the WHO Global Plan of Action on Workers' Health in south-eastern Europe. Bulgaria,

Croatia, Serbia and the former Yugoslav Republic of Macedonia have designated WHO collaborating centres in occupational health: the National Centre for Public Health and Analysis in Bulgaria, Andrija Štampar School of Public Health, University of Zagreb in Croatia, the Institute of Occupational and Radiological Health in Serbia and the Institute of Occupational Health of the Republic of Macedonia.

These institutions as WHO collaborating centres participate in implementing the WHO Global Plan of Action on Workers' Health, providing institutional and expert support through their collaborating centres. This requires either taking initiative or project leadership for implementing projects in, for example, national profiling and action plan development and developing occupational health and safety, training curricula and toolkits for protecting high-risk and underserved groups.

WHO Regional Office for Europe supports the realization of the priority actions according to the Global Action Plan on Workers' Health 2008–2017. Objective 1 of the Global Plan of Action on Workers' Health (Action 9) specified vulnerable workers and high-risk sectors as target groups. The national policy framework included measures to minimize gaps between different groups of workers such as those in high-risk sectors, vulnerable groups (younger, older, female and migrant workers) and underserved populations. There were three main areas of action: the national health policy, the European Union (EU) agenda and the relevant WHO documents, focused on the main goal of achieving a strengthened health system to address the occupational health risks of vulnerable groups.

Prominent national efforts include the preventive occupational health programme in

the former Yugoslav Republic of Macedonia, the occupational safety and health projects improving the work and health situation of agricultural workers in Bulgaria as well as in Turkey, the monitoring project of health care workers in Croatia, and the SWIFT programme dealing with social exclusion and poverty in Serbia.

The work plan of 2010–2011 focused on regional implementation of the Global Plan of Action on Workers' Health and WHO monitoring the specific needs of single countries. Albania: building capacity by training the trainers of occupational health services. Croatia: implementing the national action plan. Montenegro: implementing the national strategy on occupational health. The former Yugoslav Republic of Macedonia: further developing the occupational health system and the concept of basic occupational health services. Serbia: developing a national strategy on occupational health. Turkey: integrating occupational health into primary health care.

In addition to the biennial collaborative agreement activities, the WHO Regional Office for Europe aims at implementing an intercountry work plan: regional and subregional activities in collaboration with the networks of WHO collaborating centres, national focal points, Northern Dimension Partnership for Public Health and Social Well-being, Baltic Sea Network and South-eastern Europe Network, programme for training and education with the coordination of the south-eastern European Network for Workers' health, SEEWA – South-East European Workplace Academy, report on situation analysis and occupational health conditions in the south-eastern European countries and report on capacity-building for basic occupational health services in south-eastern Europe.

7. Occupational health services

Occupational health is a typical intersectoral activity that requires an appropriate policy and governance by the health and labour ministries. Despite its critical importance for any country, its priority on the political agenda has been rather low in both the

health sector and the labour sector. This has led to uncertainty in making policy decisions on the future development of occupational health and safety, despite strong international guidance and international regulations such as ILO Convention 161 (3).

Service delivery: service systems and infrastructure

The development of occupational health and safety infrastructure differs in the countries in south-eastern Europe depending on the overall stage of societal reform, economic development, political priorities, financial development and stage of EU accession. The coverage of occupational health and safety varies between the countries from 20% to 70%, and any increase in occupational health and safety coverage has been related to the progress in EU accession (Croatia, the former Yugoslav Republic of Macedonia). Services have been maintained in most large companies, while those in small enterprises, among the self-employed and in the agricultural and informal sectors have remained poor despite their high occupational risks.

The data obtained so far show that occupational health and safety policies and systems in south-eastern Europe are regulated by occupational safety and health law, health care law, and health insurance law, varying from country to country. According to legislation, employers are obligated to organize occupational health and safety (except for Serbia, where employers'

responsibilities are not clearly defined). The content of occupational health and safety delivery in south-eastern Europe is preventive and curative, provided mainly within primary health care, and additionally through large company models (Albania), insurance-contracted doctors' model (Croatia) and a chosen occupational health programme approach (Montenegro). The emphasis on curative services (occupational medicine) is a special challenge for occupational health and safety in south-eastern Europe, and preventive activities should be directed more explicitly to the work setting. Another challenge is the coverage of occupational health and safety, especially the underserved sectors. Having this in mind, the basic occupational health service concept, supported by the WHO Regional Office for Europe and the ILO, provides an appropriate solution, but needs feasibility testing and adjustment to the national circumstances. The challenge of coverage can be resolved by integrating occupational health and safety with primary health care services and taking support from primary health care service infrastructures (Croatia, Montenegro and the former Yugoslav Republic of Macedonia).

Funding and insurance

Occupational health funding systems cover services, funding institutions and social security for victims of occupational accidents and diseases. The employer should primarily fund occupational health and safety services, as regulated in the occupational health and safety legislation in all countries. The main principle provides funding for the well organized sectors of working life (registered companies and employees), but many workers work in small enterprises where contracts may or may not be available. Many working people are self-employed or informal workers without a formal employee-employer relationship, so the main solutions for financing services for less organized sectors are still open. Some south-eastern European countries have special occupational health and safety insurance (such as Croatia), and general health insurance covers treatment of the occupational diseases and accidents (Bosnia and Herzegovina, Serbia, the former Yugoslav Republic of Macedonia etc.).

Croatia's model contains a certain solidarity element, which also enables funding of services for non-contributors to the insurance. Funding through a legislation-based insurance system is often more stable, as government budgets become more constrained.

Romania has a special law on insurance for work accidents and occupational diseases. The insurance is compulsory for all economic activities (private and public).

Most of the weaknesses of the funding models can be controlled. The pure market system is not able to provide service coverage for all, so ensuring wider coverage requires solidarity between employers and companies in addition to public funding.

Bulgaria has introduced a system of mandatory social security for occupational accidents and diseases in accordance with article 51 of its occupational safety and health act. This makes it compulsory for

every employer to provide workers with social security for occupational accidents and

The number of active occupational health physicians in south-eastern Europe is relatively low, which makes human resources

The main body for occupational health is the ministry responsible for health policy and health services. In most of the countries, the responsibility of the health ministry is regulated by a law on health care or law on health protection. There is a person responsible for occupational health within the general health service department or sector, and occupational health issues are often

The labour ministries are responsible for developing policy and implementing occupational safety and health legislation. Labour inspectorates functioning as ministerial units or as independent

Institutes are engaged in policy development and implementation through research, training, information and advocacy. Designated institutes of occupational health with a multidisciplinary competence profile are available, for example, in Croatia, Serbia and the former Yugoslav Republic of Macedonia. In Albania, the Institute of Public Health provides support for occupational health policies and practices. In Bulgaria, the National Centre for Public Health and Analysis, a WHO collaborating centre for occupational health, has a leading

In previous decades, human resources for occupational health were continually well developed in south-eastern Europe. Experts in occupational medicine have been well educated and competent in curative and preventive occupational medicine. Nevertheless, the transition process has affected human resources through lower

diseases, and the social security payments are paid for exclusively by the employer.

Human resources

for occupational health insufficient. The shortage of occupational health nurses is even more evident.

8. Institutions and organizations

Health ministry

shared among the sectors supervising health service units and sanitary-epidemiology units. The health ministries control the professional competence of occupational health personnel. In many south-eastern European countries, the medical chamber has a special role in licensing the occupational health physicians, continuing medical education and ethics issues.

Labour ministries

government agencies conduct enforcement. The inspection may be implemented as labour law inspection or occupational safety and health law inspection.

National institutes

role in public health at the country, with special research and training activities in occupational health.

In Turkey, the ISGUM (occupational health and safety centre) as a technical directorate attached to General Directorate of Occupational Health and Safety under the Ministry of Labour and Social Security has a key role in the field at the national level.

Albania, Bosnia and Herzegovina and Montenegro still lack an institute of occupational health. In all countries, universities support occupational health.

Development of human resources

political priority, collapse of institutional infrastructures, health sector reforms and general lack of money. The position of occupational health experts within the health care system varies widely between south-eastern European countries. A major generational shift is occurring in the whole subregion, since most specialists

are approaching retirement age and young doctors generally have low interest in occupational health (except in Croatia and the former Yugoslav Republic of Macedonia). Many of the occupational medicine specialists are employed in primary health care or other jobs within the health sector.

The activities of the academic and professional community in south-eastern European countries support the harmonization of training curricula for medical students and occupational health physicians in accordance with European curricula. Croatia, Serbia and the former Yugoslav Republic of Macedonia have updated and modernized their occupational health education and training programmes. The specialty training

in occupational health for physicians is available in all countries except Albania and Montenegro.

The education, training and professional development of other occupational health profiles such as occupational health nurses, occupational hygienists, ergonomists and psychologists has been less developed and requires special attention in the future, given the high need for such services. The initiative of the South-eastern European Network on Workers' Health to establish a South-Eastern European Workplace Academy serves the regional training needs and takes responsibility for coordinated efforts in developing human resources for occupational health in the subregion.

Subregional collaboration

South-eastern Europe has demonstrated an excellent capability and potential for further developing collaboration in occupational health and safety and benefiting from cross-border learning, particularly within the framework of the South-eastern European Network on Workers' Health. One of the promising areas of collaboration is the South-Eastern European Workplace

Academy initiative, which has great potential for developing training activities and programmes.

Table 1 presents a SWOT (strengths, weaknesses, opportunities and threats) analysis of the potential for collaboration in occupational health in south-eastern Europe (2).

Table 1. SWOT analysis of the potential for collaboration on occupational health in south-eastern Europe

Strengths	Strengths
Similar history and tradition All in the process of EU accession or with new EU membership Strong professional competence Well established institutes (partly) International support by WHO and the ILO South-eastern European network and WHO collaboration Implementation of public service provision models	Massive transition in all sectors simultaneously Lack of financial resources for occupational health Shortage of human resources for occupational health Partial need for reorientation and retraining of experts Instability of working life and governance Lack of concise occupational health and safety policy (in some countries)
Opportunities	Threats
Models for closer integration with the health sector and closer collaboration with the occupational safety and health sector Comparative and collaboration research on occupational health and safety Strengthening subregional information base with help of new technologies Developing and comparing funding and insurance models Training young experts in occupational health and safety South-Eastern European Workplace Academy and other joint training projects Basic occupational health services: implementation and comparisons	New economic crisis Lowered priority for occupational health Brain drain of expert resources to other sectors Inappropriate privatization of services and adoption of service models not suited to the subregion Continual drop-out of underserved and unserved sectors due to policy and funding decisions

Source: Rantanen (2).

Common recommendations for strengthening the occupational health and safety systems in south-eastern Europe are as follows:

- give priority to workers' health at policy-making level and provide the further improvement of the legal basis for occupational health and safety development;
- raise the position of occupational health and safety within national health systems and improve content and coverage of occupational health and safety, with special attention to prevention and sustainable funding;
- implement the basic occupational health and safety concept to fill existing gaps and to cover vulnerable groups, underserved groups, unemployed people and the informal sector more appropriately;
- establish and strengthen the national occupational health institutes as centres of excellence, support the capacity-building by increasing trained human resources, and develop joint training programmes through the South-Eastern European Workplace Academy within the South-eastern European Network on Workers' Health;
- promote the public health approach to occupational health through stronger collaboration between the health and labour sectors, adopting the modern approach demonstrating benefits of prevention at work;
- develop an information system in occupational health and safety and improve the registration and notification of occupational diseases and accidents; and
- provide the support of WHO, the ILO and the EU through the different mechanisms as a critical prerequisite for further occupational health and safety development, based on successfully established networking.

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The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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Uzbekistan

Work and worklessness

Final report of the Task group on employment and working conditions, including occupation, unemployment and migrant workers.

Review of social determinants of health and
the health divide in the WHO European Region

Annex

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