



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

Johannes Siegrist
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**World Health
Organization**

REGIONAL OFFICE FOR **Europe**

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Preface

This report has been produced by members of the Task Group on Employment and Working Conditions including Occupation, Unemployment and Migrant Workers and invited external experts as part of the review of social determinants of health and the health divide in the WHO European Region commissioned by the WHO Regional Office for Europe and led by Michael Marmot. The members and experts are listed at the end.

Although all members contributed in different ways to developing the report and approved the final version, Johannes Siegrist, Ellen Roskam and Stavroula Leka wrote the main text. Commissioned papers collected in the annexes were provided by Joan Benach and Carles Muntaner (Annex 1, Tables 1 and 2), Johannes Siegrist (Annex 1, Table 3), Stavroula Leka (Annex 2), Ellen Roskam (Annexes 3 and 4) and Jovanka Bislimovska (Annex 5). All other members and external experts contributed to the report through amendments, discussions or providing

supporting materials in the process of preparing the document. As Task Group Chair, I thank all participants for their extremely helpful collaboration. I hope that the content of this publication can support developments to improve employment and working conditions and thus minimize their adverse effects on working people's health within the countries in the WHO European Region.

The Task Group is grateful to the WHO Regional Office for Europe for this important initiative, and we extend our thanks to the group working at the University College of London, which greatly supported our work. Finally, we thank two external reviewers, Tarani Chandola, Manchester, and Reiner Rugulies, Copenhagen, for their constructive critical comments, which we tried to address in the final version of this report.

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Recommendations

Low- and medium-income countries

Supranational level

- Give priority to measures of economic growth, in accordance with an environmental and sustainability strategy, to reduce poverty, lack of education and high unemployment by investing in training, improved infrastructure and technology and by extending access to employment and good quality of work throughout major sectors of the workforce.
- Intensify and extend the transfer of knowledge and skills in work-related health and safety from European and international organizations, institutions and networks to national contexts.

National level

- Reduce the burden of occupational injuries, diseases and other health risks by enforcing national regulations, by strengthening preventive efforts among vulnerable groups (in particular migrant workers) and by developing appropriate human and financial resources of occupational safety and health services.

Local level

- Promote efforts to secure and extend healthy work and employment conditions at the subnational level of sectors, occupational groups, companies and single enterprises and of collaborative links with community health promotion programmes.

High-income countries

Supranational level

- Maintain a high level of employment, in accordance with principles of a sustainable economy, without compromising standards of decent work and policies of basic social protection.
- Develop standardization of monitoring and risk management tools across countries and support the implementation of best practice approaches within single countries.

National level

- Promote opportunities for safe, healthy and secure work across all sectors of employment by giving priority to occupational high-risk groups and people who are excluded from but able to enter or re-enter the labour market.

Local level

- Promote efforts to secure and extend healthy work and employment conditions at the subnational level of branches, occupational groups, companies and single enterprises and of collaborative links with community health promotion programmes.

The aims of this report are (1) to summarize current evidence on the effects of employment and working conditions on health and to describe the contribution of these effects on health inequalities; (2) to identify and discuss interventions and policies

that aim at reducing work-related health inequalities; (3) to review available work- and health-related monitoring tools; and (4) to propose a set of policy recommendations related to the reported evidence.

Employment and working conditions and health inequalities

Work and employment are of critical importance for population health and health inequalities in several interrelated ways. Participation in or exclusion from the labour market determines a wide range of life opportunities that are mainly mediated through regular wages and salaries. Material deprivation (such as in case of unemployment or low-skilled jobs) and feelings of unfair pay contribute to physical and mental ill health. Moreover, occupational position is crucial for people's social status and social identity, and threats to social status due to job instability or job loss again affect health and well-being. In addition, exposure to physical, ergonomic and chemical hazards at the workplace, physically demanding or dangerous work, long or irregular work hours, shift work and prolonged sedentary work all can adversely affect the health of working people. The same holds true for an adverse psychosocial working environment defined by high demand and low control or an imbalance between the effort made and the rewards received in turn. Experiences of discrimination, harassment and procedural injustice aggravate stress and conflict at work, especially in times of high competition and increasing job insecurity. Health-adverse material and psychosocial conditions of work and employment are unequally distributed across society. With each step one moves up on the social

ladder (as measured by educational level, income and labour market or occupational position), the more favourable one's work and employment conditions and the better one's health.

The countries in the WHO European Region vary greatly in employment and working conditions. In general, high-income countries have higher levels of employment and good quality of work, associated with better availability of national labour and social policies, including the provision of occupational health and safety services.

International research has produced comprehensive scientific evidence on increased health risks resulting from long-term unemployment, precarious employment and chronic exposure to occupational hazards and stressful psychosocial working environments. A summary of this evidence is incorporated in this report and detailed in tables in Annex 1 to the report. A higher burden of employment and work-related diseases is therefore observed among socially deprived population groups, thus calling for appropriate investment in preventive and interventional efforts. The entry points of such efforts have been described in detail by scientific knowledge, providing challenges for policy.

Interventions and policies that aim at reducing health inequalities

This report has identified a variety of initiatives to improve the quality of work and employment at the macrostructural and microstructural level. Despite the methodological difficulties of evaluating

the contribution of these initiatives towards reducing health inequalities, impressive progress was achieved. For instance, at the macrostructural level, WHO, the International Labour Organization (ILO) and the European

Commission were – and continue to be – proactive in setting standards for the improvement of healthy working conditions, either by legal regulations or voluntary agreements, by developing guidance, training and monitoring tools for implementation and by supporting the provision of services. Injury prevention, occupational safety measures, monitoring and surveillance of occupational diseases and psychosocial risk management are examples described in the report and the annex. The same holds true for several national policies tackling health-adverse working conditions by innovative approaches. Prominent examples are the management standard approach in the United Kingdom, the activities evolving from a renewed Working Conditions Act in the Netherlands, Denmark's initiative of promoting healthy work through shared monitoring tools and networks of support involving labour inspectors and pioneering occupational

health initiatives in Finland and other Nordic countries. Nevertheless, the effects of macrosocial policies on quality of work and workers' health have rarely been evaluated systematically.

At the microstructural level, a number of worksite health promotion programmes have been successfully implemented in different types of organizations, providing models of good practice. Topics evaluated in the report include improved individual work time control, restriction of overtime work, flexible work schedules, work–life balance, increased task autonomy and self-direction at work, availability of supportive leadership and a balance between the effort made and the reward received at work. However, many interventions so far have been directed at the individual or interpersonal level, whereas structural and organizational changes have been less well studied.

Assessing work and health-related monitoring tools

Systematic monitoring of occupational health risks and their prevention is a crucial task of responsible stakeholders and a prerequisite for effectively reducing health disparities at work. As shown in this part of the report, several international, national and local initiatives started to improve the availability, quality and comparability of data, and some of the most advanced initiatives are briefly described. Monitoring occupational health conditions is not restricted to established administrative procedures of data collection and data analysis. Rather, several more comprehensive approaches towards assessing the quality of work in terms of validated self-report questionnaires were successfully developed. Examples from Denmark, United Kingdom, France and Germany document the utility of this new information for tailored workplace health promotion activities.

Additional approaches towards involving working people in attempts to identify unmet needs and neglected occupational risks are

illustrated. Importantly, these approaches represent ways of advocating workers' rights to experience a safe, healthy, and fair working environment (such as the Work Security Index developed by the ILO and studies applying participatory action research). It is concluded that the benefits of collaborative action between occupational health researchers and professionals who are responsible for delivering occupational health services have not yet been sufficiently realized, although some promising examples have been identified and briefly described.

In summary, substantial information is now available on how to identify the work- and employment-related burden of disease within the countries in the WHO European Region. The main challenge consists in applying monitoring tools in a systematic and comparable way and in reducing the gap between knowledge and action. To this aim, several relevant policy recommendations are derived from available evidence.

Policy recommendations

Separate recommendations are given for low- and medium-income countries and for high-income countries, given the current differences in economic, social and political development. This distinction does

not preclude synergy and efforts towards convergence but rather indicates different priorities for action. Moreover, we address responsible stakeholders at three distinct levels: supranational, national and local.



1. Introduction

1.1. Aims of the report

Employment and working conditions matter for health, well-being and social justice. A substantial part of social inequality in adult health is related to differences in employment, including unemployment, and the quality of work. This applies to inequalities in health between and within countries. These differences in employment and quality of work can largely be addressed and changed through economic, social and political developments.

Thus, reducing inequalities in adult health by improving employment and working conditions poses challenges. Some of these challenges are common to all countries in the European Region of WHO, despite their great diversity, whereas other challenges are related to specific regional contexts. Policies and programmes that aim at tackling these challenges need to take into account the available knowledge about key determinants of unequal health and about promising ways of changing them.

This report aims to provide relevant knowledge that may guide such policies and programmes. More specifically, this report addresses four aims.

Aim 1. To summarize current evidence on the effects of employment conditions (including unemployment) and working conditions on health and to describe how these effects contribute to documented social inequalities in health. This evidence reflects the current

state of scientific knowledge and, where appropriate, includes relevant information from countries of the European Region of WHO.

Aim 2. To identify and discuss interventions and policies that have been developed at different levels to reduce health inequalities related to working and (un)employment conditions. Specifically, interventions by and policies of (1) companies, firms and enterprises, (2) stakeholders and social partners, (3) national actors and (4) European and international agencies and organizations are targeted.

Aim 3. To propose indicators and measurement tools that can be applied in routine monitoring and evaluation systems. Indicators and tools will be instrumental in identifying policy targets and in surveying and evaluating interventions. Comparability of indicators across the Region's countries will be a major challenge.

Aim 4. To recommend short-, medium- and long-term interventions and policy programmes that responsible partners and authorities could implement within their specific contexts. These recommendations will be based on the achievements of the above aims and will critically assess options of labour market regulations, labour standards and social protection measures in a globalized economy.

1.2. Social inequalities in employment, work and health

1.2.1. Essential relations

Work and employment are critically important for population health and health inequalities in at least four interrelated ways.

First, participating in or being excluded from the labour market determines a range of life chances that are mainly mediated through

regular wages and salaries. Adverse effects on health produced by the exclusion from work and employment are most visible among the people who experience long-term unemployment. In addition to material constraints and deprivation resulting from

loss of employment, many psychosocial stressors contribute to poor health not only among unemployed people themselves but also among their partners and children. These constraints and stressors are related to the loss of a core role in social life that is crucial for one's sense of identity, which highlights the importance of and need for prevention in the forms of goal-oriented activities and the associated experiences of control, reward, social participation and support. The prevalence of unemployment is unequally distributed across society, with those in lower socioeconomic positions at higher risk, which contributes to the manifestation of social inequalities in health.

Second, wages and salaries provide most of the income of most employed people. There are substantial income and benefit inequalities in the countries of the European Region, leading to material deprivation among the worst-off people. In addition, people who are economically better off may experience relative deprivation. Several studies have demonstrated the adverse health effects of low income relative to the effort made at work, thus adding further evidence to the links between work, health and social inequality.

Third, exposure to physical, ergonomic and chemical hazards at the workplace, physically demanding or dangerous work, long or irregular work hours, shift work and prolonged sedentary work all can adversely affect the health of working people. Again, these conditions are more prevalent among employed people with lower educational attainment and among people working in jobs requiring a low level of skills.

Fourth, as the nature of employment and work has changed significantly over the last half century, psychological and socio-emotional demands and threats evolving from an adverse psychosocial working environment have become more widespread in all industrialized societies. Technological progress and economic growth in the context of globalized markets and trade result in new types of tasks (such as information processing, personal services and service centres). This has led to an unprecedented flexibility of employment arrangements and contracts, often in combination with

job instability, precarious employment and insecurity and with an increase in work intensification and long hours of work. These significantly changed conditions accompanied by a stark increase in social and economic insecurity as well as increases in income inequality have played a key causal role in conflicts within workplace hierarchies and power relations, restricting the participation of employees in decision-making and a spectrum of covert or overt discriminatory activities. Toxic combinations of these dimensions of work are frequent in the current labour market and yet unequally distributed among occupations. Their highest prevalence is found among the most vulnerable and deprived workers, specifically those in precarious jobs defined by employment insecurity, high employment-seeking effort, a lack of safety at work and exposure to multiple stressors including strenuous tasks with low control, low wages and benefits, fear of exerting labour rights and high job instability. As documented below, ample evidence indicates the adverse effects on health and well-being produced by these conditions.

In summary, as documented below, adverse employment and working conditions act as powerful determinants of health and well-being, and exposure to these conditions is not confined to the poorest members of society, although the poorest are at even higher risk than other groups. There is a social gradient of exposure and related health across the whole of a society. With each step one moves up on the social ladder (as measured by educational level, income and labour market or occupational position), the more favourable one's work and employment conditions and the better one's health.

The common scientific approach towards studying associations of work with health and well-being tends to focus on pathogenic rather than salutogenic or protective and health-promoting effects, thus studying adversity among lower socioeconomic groups of employed people rather than opportunities for good health and positive development. This is due to the notion that health inequalities are primarily linked to social disparities in exposure and vulnerability to stressors and thus to an unequal distribution

of these resources, which are instrumental in coping with risk. Focusing on exposure and vulnerabilities and focusing on resources are therefore complementary approaches of a consensual goal of reducing modifiable inequalities. This report strongly emphasizes exposure and vulnerability. However, as will be documented, respective scientific evidence provides a convincing basis of knowledge for deriving recommendations on how to develop and implement resources representing “good” (health-promoting and health-protective) work. In particular, this will become evident in the context of theoretical models that identify specific components within the complexities of work and employment that are critically important for health. Complementing this perspective, a growing body of scientific evidence demonstrates direct positive, health-promoting effects of good working and employment conditions, acting as resources and salutogenic forces against the afflictions of stressful experience and reinforcing health through beneficial psychobiological processes (1–3). This report includes this evidence.

For several reasons, the relationships between employment, work and unequal health outcomes are highly complex and difficult to disentangle.

First, they involve pathways that act at different levels, such as the macrostructural levels of economic development, labour markets, national policies or international organizations as well as the microstructural levels of special occupational groups, single enterprises or companies etc. (4).

Second, the effects of work and employment conditions on health extend over long periods of the lifespan. In many cases (such as asbestos), disease is manifested only years or even decades after exposure. Similarly, the

adverse effects of unemployment on health increase with the duration of unemployment. Associations between work and health are often obscured by the dynamics of occupational trajectories, by upward or downward social mobility of labour market participants or by their long-term effects that only arise during retirement. In addition, the health effects of work and employment are not confined to the working people but may affect their partners and children as well.

Third, some of the pathways leading from unequal occupational exposure to unequal health are bidirectional. For instance, poor health often reduces successful labour market integration, as is the case for severe disability or several chronic disorders (such as depression or addiction). Moreover, differential vulnerability of people entering the labour market may influence their occupational trajectories or may modify the effects of occupational exposure on their health (5). These bidirectional pathways are further complicated by differential impacts of labour, social and health-related policies that have been implemented at the national or local levels to mitigate adverse effects on health produced by distinct employment and work conditions (6).

In the following section, we propose a conceptual framework that emphasizes several essential pathways to be analysed in this report, thus reducing the complexity of the associations mentioned. These essential pathways are discussed in the following parts of the report, substantiated by available empirical evidence. Further, these pathways indicate relevant entry points for policies and programmes that aim at reducing the burden of work- and employment-related unequal health (7).

1.2.2. The conceptual framework

Fig. 1 outlines a conceptual framework that emphasizes a set of unidirectional or bidirectional associations within a complex web of causation linking employment and working conditions with unequal health. The figure specifies 14 pathways, of which four pathways are considered to be critically relevant to this report (I–IV in bold, Fig. 1).

These essential pathways are discussed in greater detail in the main parts of the report (Chapters 3 and 4). Nevertheless, assessing their significance also requires considering the remaining associations indicating broader (upstream) determinants of employment and working conditions and of policies (implemented to reduce their adverse

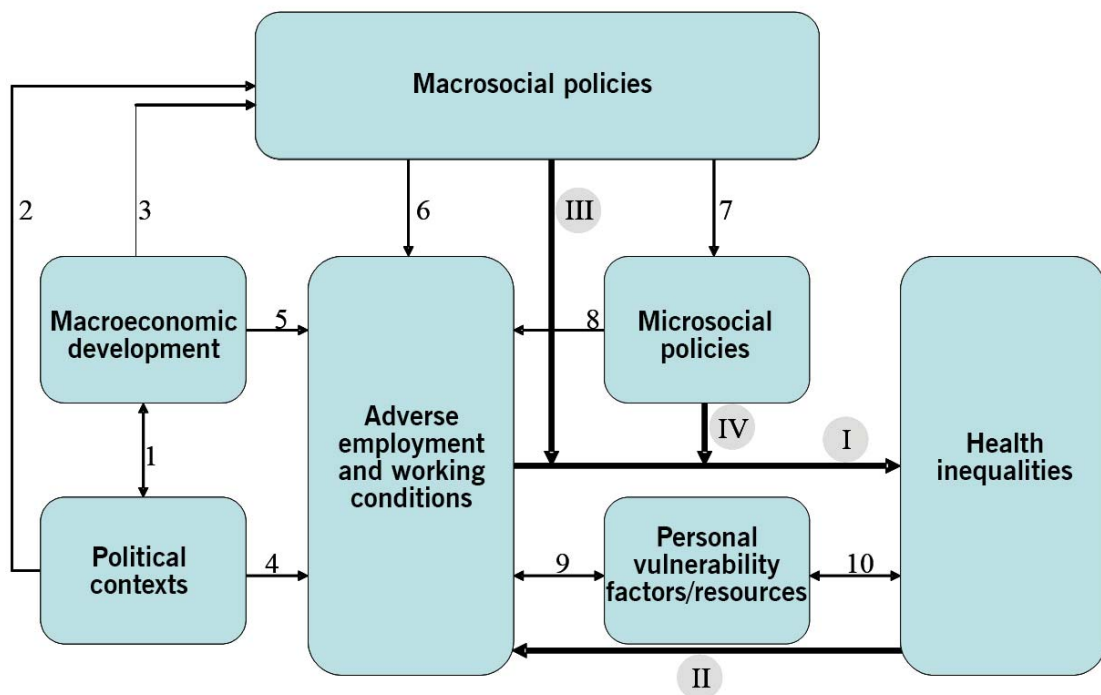
effects on health). Moreover, several indirect effects on health are obvious, mediated by the working people's vulnerability factors and resources (remaining lines in Fig. 1). Although this conceptual framework reflects an already reduced representation of the complex web of causation (8–10), it nevertheless elucidates the main explanatory approaches and thus may be useful in structuring the core arguments outlined in this report. To this aim, we briefly describe each of the 14 pathways displayed in Fig. 1. Subsequently, some upstream factors are discussed in more detail (section 2), before the main evidence is presented on the four pathways we believe are critically important for this report.

Pathway 1 indicates the powerful bidirectional links between macroeconomic development and macropolitical contexts. Evidently, a stable and favourable macropolitical context may stimulate and promote economic growth. Conversely, economic growth, if developed in sustainable ways, can contribute to political stability and progress. However, political upheaval

or anomie exerts opposite effects, at least in a short- and medium-term perspective, as demonstrated by the case of the collapse of communism in 1989 in the former USSR. There are also historical examples indicating that deep economic recessions can adversely affect a country's political system, as was the case in Germany in 1933.

Pathway 2 displays the effects of distinct macropolitical contexts on the development of macrosocial policies: welfare, health and labour policies. These policies include unemployment benefits, pension insurance, sickness pay and occupational health and safety measures. A broad body of research demonstrates that distinct political systems tend to develop distinct welfare state regimes. For instance, in Scandinavian countries, a social democratic welfare state model was identified, distinct from a conservative-corporatist welfare regime that is more prevalent in continental western European countries (such as France and Germany), and from a liberal regime that dominates in the United Kingdom and the United States (11) (see also section 2.2).

Fig. 1. The conceptual framework: employment and working conditions and health inequalities



However, welfare regimes are also strongly influenced by economic developments (Pathway 3). For instance, a political context shaped by neoliberal economy that favours rapid expansion of transnational trade, labour and capital markets is likely to limit

social and welfare policies and to weaken the regulatory power of the state. On the other hand, the development of a generous welfare state regime heavily relies on full employment, on a high level of labour market participation, including a substantial

participation of women and on moderate economic growth, as illustrated by the development of Scandinavian welfare policy during the past 40 years (6).

At several levels, a country's political system directly affects the national labour market, the development of industries, the qualification of workers and the quality of working conditions (pathway 4). The regulation of migration and access to employment, the extension or reduction of the public employment sector and the size of the national budget attributed to the labour sector are examples of these effects.

Macroeconomic developments act as major upstream factors on employment and working conditions and their effects on the health of working populations. This applies to all countries in the WHO European Region (pathway 5). Since we consider this pathway to be of particular importance, we describe related evidence, at least briefly, in a separate section below (Chapter 2).

A similar argument concerns pathway 6, which indicates the effects of macrosocial policies on employment and working conditions. As will be documented, countries in the WHO European Region vary substantially in the development and implementation of occupational health and safety regulations or social security measures in case of unemployment, disability or retirement (Chapter 2).

These macrosocial policies favour or inhibit the development of microsocial policies that influence the quality of work and employment at the local level: at the level of organizations, corporations, specific business sectors or specific occupational groups (pathway 7). For instance, the open method of coordination between European Union countries may instigate local initiatives of workplace health promotion in some countries or may initiate some competition among firms or companies to develop models of good practice of risk management at work (12).

Despite their restricted impact, these microsocial policies contribute to developing health-promoting work and employment (pathway 8). In the long term, they may eventually produce significant positive effects on the quality of work and employment

at the national level through processes of diffusion of innovation. The job redesign initiative at Volvo in Sweden in the early 1970s, favouring teamwork in manufacturing automobiles, is one such example (13).

As mentioned, some associations delineated in Fig. 1 are bidirectional. Among others, this applies to the relationship between exposure to adverse employment and working conditions and the vulnerability of the working people (pathway 9). On the one hand, working people handle occupational hazards and stressors differently, depending on individual coping resources, capabilities and personal vulnerability. On the other hand, personal capabilities and vulnerabilities determine occupational trajectories and related exposure to hazards and stressors at work, acting as selection factors in this framework. As demonstrated by the results of several ongoing birth cohort studies, unfavourable occupational trajectories are often triggered by adverse early life circumstances that transfer social inequalities in work-related health across generations (14).

Similarly, bidirectional effects are observed between personal coping resources or vulnerability and health (pathway 10). Strong socio-emotional support outside work or favourable personal resources, such as self-efficacy, optimism, and self-esteem, are examples of protective factors that can mitigate the effects of adverse exposure on health. Conversely, poor health among working people may undermine their coping efforts and resources, thus aggravating the susceptibility to toxic and stressful exposure (15).

However, by far the most important pathway in the context of this report concerns the association of unequal exposure to adverse work and employment conditions with unequal health (pathway 1). Employment conditions influence health both directly (such as adverse effects of long-term unemployment or job insecurity) and indirectly (such as the adverse effects of hazardous jobs among low-skilled workers in particular). These influences may be disease-specific (as in occupational diseases, such as asbestosis) or they may act in rather non-specific ways, increasing the susceptibility of

workers to a range of disorders (as in work stress-related disorders). Given the relevance of these pathways, we discuss related evidence in detail in a main part of this report (sections 3.1 and 3.2).

Since a substantial part of the workforce in rapidly ageing societies is suffering from chronic disease or disability, sustained efforts are required to reintegrate sick people and people with disabilities into work and employment by appropriate rehabilitation measures (pathway II). We devote a special section to discussing evidence on the successes and obstacles of occupational rehabilitation (section 3.3). With regard to pathway II, a distinguishing conceptually between health and health inequalities in Fig. 1 would be desirable, since all workers affected by a specific disorder are exposed to problems of return to work. However, given the main emphasis of this report (work- and employment-related health inequalities) and

an already complex web of pathways, Fig. 1 does not represent this additional distinction.

Finally, both macrosocial (pathway III) and microsocial policies (pathway IV) are intended to mitigate the adverse effects of employment (including unemployment) and work conditions on people's health and to promote healthy work at the local, national and international levels. What is known about the impact of such policies on health and specifically on reducing the social gradient of work-related health is discussed in a further main chapter (sections 4.1. and 4.2).

This report mainly emphasizes how employment and working conditions affect health inequalities and how evidence of existing pathways can be used to help improve the health of working populations. However, the current state of research on work and health does not yet adequately address the complexities suggested in this conceptual framework (Fig. 1).

1.3. The process of generating knowledge

Any review of employment, working conditions and health faces various challenges. First, much of the research into the interactions between these factors does not focus on health inequalities and their causes. Second, knowledge of best practices and examples of policy successes in reducing health inequalities are limited. Third, some of the most adverse working conditions are often hidden or less well known. Standard systematic reviews are limited by the fact that studies are selected based on the quality of the methods rather than on theoretical considerations. The classical paradigm of randomized controlled trials is rarely

applicable in this context. Thus, following the precedent set by the WHO Commission on Social Determinants of Health, we have taken a broader view of what constitutes evidence in this field of scientific enquiry (16,17). Using a wide range of strategies of enquiry, a variety of methods and multiple sources of data and evidence, we synthesized the inputs of several disciplines.

First, in searching scientific literature, we used digital bibliographic databases including Medline, PsycInfo, Sociological Abstracts, Social Sciences Abstracts, EconLit, American Business Inform, Business Abstracts,



Public Administration Abstracts, Political Science and Worldwide Political Science Abstracts. Search strategies and key words were identified after a series of tests and qualitative evaluations of each of the listings obtained. The searches were limited by year of publication, mainly from 1990 to 2011.

Importantly, the information computed in Annex 1 is based on search strategies using the following keywords: job insecurity, job instability, job loss, downsizing, temporary employment, flexible work, non-permanent work, longitudinal study, cross-sectional study, case-control study, psychological distress, psychosomatic symptoms, minor psychiatric morbidity, self-rated health, health-related behaviour (Tables 1 and 2 in Annex 1), demand-control model, job-strain model, decision latitude, job control, job demands, social support at work, effort-reward imbalance model, overcommitment, esteem, promotion prospects, job security, organizational justice, procedural justice, interpersonal justice, distributive justice, longitudinal observational studies, cohort studies, coronary heart disease, cardiovascular disease, depression, physical and mental functioning, self-rated health, stress-related disorders (Table 3 in Annex 1).

In evaluating study findings, priority was given to results reported from prospective observational studies in occupational health epidemiology and to intervention studies. Cohort studies represent the gold standard in this field of research. This is because exposure assessment precedes disease onset, that the risk of incident disease is estimated as a function of exposure, and that effects are adjusted for relevant confounding factors in multivariate analysis.

Considering intervention studies, we not only synthesize evidence from trials but also discuss the available methods of implementing interventions in organizations. This is important because the conditions that enhance intervention effectiveness most significantly need to be identified. These methods include (1) The risk management approach (18), (2) the management standards, United Kingdom (19), (3) the health circles method (20) and (4) the Prevenlab method (21). Critical issues of analysis concern employee participation,

management support, risk assessment, integrating intervention into existing procedures and organizational cultures and evaluation measures (22). For the purpose of this report, supporting evidence of interventions used in the European Region focuses primarily on interventions that resulted in successful outcomes.

Second, we aimed at identifying relevant materials such as books, reports and unpublished documents. To identify and select online documents, we followed the strategy of using metasearchers (ixquick.com, metacrawler.com and search.com) and a search engine (google.com). Searches were made for each employment dimension mentioned above, using keywords. For each dimension, additional keywords were considered to limit the results of the search to the topic of interest. To reduce the number of documents, we focused on publications after 1999-2000. Moreover, we consulted key websites of a variety of relevant organizations, in addition to the core documents provided by the WHO Regional Office for Europe and the European Agency for Safety and Health at Work.

Third, we added a number of original research findings from ongoing comparative studies in occupational epidemiology across European countries as well as from single case studies. Clearly, this evidence is selective, since it reflects the research priorities of the authors of this report who were or are involved in the respective



studies. Nevertheless, because of the depth of enquiry, these results supplement information derived from more general, often administrative data sets.

Despite our efforts in following these principles, we cannot claim to represent all relevant aspects of this large and diversified field of research in this report. Moreover, the evidence corroborated through this process of knowledge generation may be biased to some extent in terms of the language of the literature reviewed (largely English) and

in terms of publication bias (more positive than negative findings being published). A more elaborate synthesis of information, such as by conducting a meta-analysis, was not feasible, given the heterogeneity of sources, indicators, study designs and study populations available. Nevertheless, with the primary interest being evidence-informed recommendations, in considering the aspects of social inequalities in health that are attributable to work and employment, our aim was to contribute to developing the evidence base for good and sustainable work.

1.4. Structure of the report

Following the introduction, this report is organized in four chapters. Chapter 2 starts with a general interpretation of how economic change influences health (section 2.1). Economic change is considered an overarching factor affecting health via several pathways, manifesting itself as recession and economic crisis or as rapid growth involving restructuring, merging and downsizing as well as intensified competition. Section 2.2 briefly describes major variation in employment and working conditions in the WHO European Region, focusing on labour force participation and regular employment, unemployment rates and the age- and sex-related composition of the workforce (subsection 2.2.1), on atypical employment, earning inequalities and the special challenges of migrant workers (subsection 2.2.2) and on labour and social policies, with special focus on occupational health and safety policies (subsection 2.2.3).

Chapters 3 and 4 refer to the four main pathways depicted in Fig. 1 by providing research derived from selective systematic reviews. Chapter 3 analyses how adverse employment conditions (section 3.1) and adverse working conditions (section 3.2) influence health (pathway I in Fig. 1). Each section is further structured into subsections dealing with long-term unemployment (subsection 3.1.1), atypical employment (subsection 3.1.2) and job instability and insecurity (subsection 3.1.3). Similarly, the

section on adverse working conditions focuses on occupational hazards and injuries (subsection 3.2.1), working time-related risks (subsection 3.2.2) and adverse psychosocial working environments (subsection 3.2.3). Finally, section 3.3 summarizes evidence on the barriers to and the successes of returning to work among chronically ill people and people with disabilities (pathway II in Fig. 1).

Chapter 4 addresses programmes and policies that were developed to reduce the burden of work-related diseases and thus, the social gradient of work-related health. Again, the main results from relevant research conducted in different traditions are discussed. This evidence is divided into studies dealing with interventions located at the macrostructural level (pathway III in Fig. 1), involving national or international organizations or specific stakeholder initiatives (section 4.1), and studies dealing with interventions located at the microstructural level of single organizations, firms or occupational groups (pathway IV in Fig. 1) (section 4.2). Since the implementation of appropriate monitoring systems is an important prerequisite for successful policies, this topic deserves special attention. Section 4.3 presents some promising new approaches and highlights the need for further development.

In Chapter 5, main recommendations are derived from the main parts of this report. Thus, all four aims of the report can be identified in the way its structure has been designed.



2. Economic and political contexts of employment, work and health in the WHO European Region

2.1. *The role of economic change in employment- and work-related health: a general perspective*

Economic growth has long been considered an ultimate goal of modern societies or at least a precondition for essential societal and political progress. Nevertheless, economic growth not only increasingly threatens the world's ecological systems but also produces substantial changes that directly affect the health of populations (7). Some of these changes are beneficial to population health, increasing welfare and well-being, but some adversely affect health. For instance, economic recession with severe risks of worldwide economic crises increases unemployment rates, job instability and poverty. Similarly, rapid economic growth in the context of globalization promotes work intensification, associated with processes of downsizing, restructuring and outsourcing. As demonstrated below, these conditions increase the burden of disease among employed people. The same holds true for adverse effects of trade liberalization, transnational workforce migration and wage disparities associated with globalized economic competition and deregulation. Under these conditions, occupational health and safety regulations and standards of labour protection are often neglected or violated, thus aggravating work-related hazards and diseases. For these reasons, it is important to explore the links between economic change and health in a general perspective before turning to the more concrete steps of analysing the economic and political contexts of employment, work and health in the WHO European Region (23).

How does economic change affect individual health? Probably the most important link between macroeconomic change and adverse health of individual working people is defined by the notion of threat. Threat arises from a sudden or recurrent interruption of habitual living and working conditions in which the individual's established coping patterns are powerless to meet an undesirable challenge. Threat may fuel insecurity about one's sense of mastery or control or even result in experiences of loss of control with its associated negative consequences. Threat to and loss of control are likely to provoke sustained activation of the body's innate stress axes. In the long run, these activations may trigger a variety of physical and mental disorders and thus increase the burden of disease (24).

These threats to successful coping, security and personal control produced by economic change manifest themselves mainly in three areas. First, people's capabilities to meet the demands at work may be compromised. In times of rapid economic expansion, growing work pressure often results in overtaxing people's available resources to meet expected demands. Alternatively, in the context of economic recession, being on less than full time or becoming redundant prevents people from making adequate use of their skills and capabilities. Both types of threats to available capabilities may be equally stressful and have been shown to elevate the risk of stress-related disorders (see sections 3.1 and 3.2).

A second domain of threatening experience concerns people's rewards that are expected in return for effort put forth. This becomes most evident during periods of low economic growth or in times of economic shocks when wages and salaries are reduced and promotion prospects are blocked. Rising poverty resulting in declining consumer spending, loss of homes and increases in debt, contributing to morbidity and mortality via enhanced material, behavioural and psychosocial adversity. The same applies in case of excessive and rapid economic growth when income inequalities widen between population groups and specifically when the balance between workers' productivity and their earnings gets steeper. As will be demonstrated, health-adverse frustration with the rewards linked to the economy is not confined to the material dimension but includes mental and social aspects as well (see sections 3.1 and 3.2).

Third, basic threats may erode core social positions, specifically employment status. Again, job instability, forced downward mobility and job loss are much more prevalent in times of economic recession or crisis than in times of growth and may intensely affect the health and well-being of exposed people. This is due to the threat of relevant personal needs that are intrinsically related to maintaining an occupational position in the labour market. Having a job is a prerequisite for a regular income which, in turn, structures a wide range of life chances and living standards. Moreover, employment characteristics determine adult socioeconomic status in modern societies more so than any other social circumstance. In terms of psychosocial well-being, paid work provides opportunities for personal performance, learning and achievement. Being able to meet challenging demands and to receive favourable feedback, develop skills and be supported by colleagues are important prerequisites for positive self-experience at work. Positive self-experience manifests itself through recurrent feelings of self-efficacy and self-esteem. Threats to these continual experiences from job insecurity, forced downward mobility or job loss may interrupt taken-for-granted routines of everyday life and evoke anxiety, anger or even helplessness

and associated psychobiological responses. To a lesser extent, these experiences may occur in the context of rapid economic expansion. For instance, with increasing job changes and job promotion opportunities of the workforce and with rapid restructuring of enterprises, employees are at elevated risk of suffering from status inconsistency. Status inconsistency is defined by a discrepancy between a person's available qualification or skills (such as low level of skills) and the demands related to his or her acquired occupational position (such as middle or upper management). Employees who experience status inconsistency are at elevated risk of suffering from stress-related disorders (see sections 3.1 and 3.2). Similarly, rapid economic expansion often leads to work intensification and excessive overwork, which are demonstrated risk factors for chronic stress and a variety of potential chronic diseases that may follow (25).

To summarize, economic change provokes an increasing frequency and intensity of threats to the working person's capabilities, rewards and employment status. Threats may occur during rapid economic growth or in times of economic recession and crisis. They are usually more prevalent and more pervasive in this latter case. At the macro level, threats evolving from economic changes can affect large population segments or even the country's entire workforce (4). Note the dramatic economic and social upheaval in Russia and other post-communist societies following the collapse of the USSR in 1989 and its harmful effects on population health (26,27). Another example would be the anticipated worldwide adverse health effects of the current economic crisis (28,29).

At the micro level, threats produced by economic change challenge the working person's ability to adapt to new demands and new working environments. These challenges may overtax capabilities, compromise established rewards or even jeopardize continued employment. These effects depend on labour market opportunities, thus triggering poverty, lack of resources and prospects of future life, social isolation or even despair (30).

2.2. Major variation in employment and working conditions in the WHO European Region

There is substantial variation in the degree of economic development, of welfare and labour policies and of labour market composition among the countries in the WHO European Region. The same applies to differences in health, as measured by life expectancy, the mortality of certain age groups or the burden of disease. However, there are also differences between European Union (EU) countries and the countries of the former USSR (and between the 15 countries that were EU members before 2004 (EU15) and the 13 countries that have become members since 2004). Additional differences may be due to the fact that such countries as Switzerland, Norway, Iceland, Turkey and Israel are also in the WHO European Region.

Although a detailed analysis of employment, working and health conditions in these countries is far beyond the scope of this report, we briefly discuss major trends in:

- labour force participation and regular employment, with special focus on general unemployment rates and youth unemployment rates; the labour market participation of women versus men and the age composition of the workforce in regular employment;
- atypical employment and earning inequalities, exemplified by results from recent case studies; and
- labour and social policies, with special focus on occupational safety and health policies (often used interchangeably as occupational health and safety policies).

To date, these trends cannot always be separated, given the rapid changes in a globalized labour market. For instance, fluctuation between unemployment and atypical work is frequent, and they both exert adverse effects on health, as will be documented.

2.2.1. Labour force participation

2.2.1.1 Unemployment

The unemployment rate varies according to countries' level of economic development, according to national labour and social policies and according to the composition of their workforce in terms of qualification and skills, age, sex and the proportion of migrant (or foreign) workers. Moreover, the unemployment rate depends on cyclic and seasonal changes, on international trade conditions and economic crises and on technological developments within and between employment sectors (agriculture, industrial production, service occupations and professions). Importantly, the duration of unemployment (with particular emphasis on long-term unemployment) and the number of periods of being unemployed during people's occupational trajectories are crucial additional markers of potential effects on health produced by labour market participation or exclusion. For the countries included in Eurostat statistics, updated information on

unemployment rates is available according to sex, age group, nationality, educational attainment and duration (31).

The unemployment rate is the number of unemployed people divided by the number of people active in the labour market. According to Eurostat, the unemployment rate in the 27 countries that were members of the EU before 2014 (EU27) was 6.7% in the first quarter of 2008, but rose sharply during the economic crisis to 11.1% in May 2012. The respective absolute estimate is 24.9 million men and women (31). Among the EU countries, Austria, the Netherlands and Germany had the lowest current unemployment rates (4.1–5.6%), and Spain and Greece had the highest rates (24.6% and 21.9%, respectively) (31). The rates are generally higher in countries in eastern, south-eastern and south-western Europe than in countries in northern and western Europe and some in central Europe.

Although women traditionally have had higher unemployment rates than men, this gender gap has recently narrowed or has even been reversed in several European countries. Almost all these countries have a strong graded relationship between educational level and unemployment, leaving those with lower education at higher risk of unemployment. For instance, the average unemployment rate in the EU27 was 9.8% for those who attained at most a lower secondary education but only 3.4% among those with tertiary education (31).

The same applies to the duration of unemployment. Moreover, foreign nationals usually have higher rates of unemployment than native nationals, even considering the level of education.

Variations in youth unemployment rates (15–24 years old) are of particular concern. For instance, in 2008, in Spain, Greece, and Italy these rates were higher than 20%, and across the EU27 countries the mean rate was 15.4%. Within the EU, almost 5 million young people are unemployed, and the increase of these rates over the past five years was steeper than the increase in overall unemployment rates. Nevertheless, some caution is needed in interpreting quantitative differences, since the criteria for defining unemployment and the degree of comprehensiveness of populations included are not always identical.

It is premature to estimate the impact of the recent economic crisis on labour market changes in the European Region. However, some preliminary signs are noteworthy. Bank

crises tend to increase unemployment rates by about 7 percentage points over a mean 4-year period (32). Under these conditions, the workforce is most vulnerable in the countries in which the financial sector drives large portions of the gross domestic product (GDP). This is the case in Iceland, Ireland, Greece and the Baltic countries, among others. In Greece and Lithuania, for instance, unemployment rates increased by more than 10 percentage points between 2007 and 2009. According to Eurostat (33), about 23 million workers were unemployed in the EU27 countries, with the lowest rates in the Netherlands (4.2%), Austria (4.3%) and Luxembourg (4.5%) and the highest rates in Spain (20.7%), Lithuania (17.3%) and Latvia (17.2%).

This crisis has clearly resulted in significant economic hardship for large population groups in these countries, and adverse health effects of loss of income and savings and rising debts widening social inequalities in health have been documented (34). Surviving an economic downsizing process does not protect those who maintained their jobs from subsequent exposure to financial hardship and eventually poverty. Importantly, the extent of the burden of disease related to economic change is modified somewhat by national social and labour policies: the characteristics of national welfare regimes (35,36). In general, the fluctuation in mortality rates across economic cycles is much stronger in countries with weak social protection systems than in those with extended social and welfare policies (26,37) (see section 4.1).

2.2.1.1.1 Unemployment and the social gradient

In the framework of this report, unemployment confronts policy with two major concerns. First, within each country in the WHO European Region that provides respective data, the probability of experiencing job loss and of being exposed to long-term unemployment is strongly associated with level of education and other measures of people's socioeconomic position. Although a social gradient is manifest in most

cases, a substantial gap in the prevalence and duration of unemployment is always observed between the socioeconomically most deprived group at the bottom of a society's social structure and the remaining groups. Even if one takes into account powerful social selection factors operating in this group, the data point to a significant role of cumulative disadvantage operating in early life, adolescence and young adulthood.

Thus, policy measures of primary disease prevention and health promotion need to target these stages in the life course, with a strong effort to reduce youth unemployment by increasing qualification and access to work, even if this access may be restricted to atypical work for a limited period of time.

The second concern relates to elevated future health risks among the people who become unemployed. Section 3.1.1 presents current knowledge about the magnitude of these risks and the type of disorders associated with job loss. Despite the methodological difficulties of the respective studies, robust

2.2.1.1.2 Types of employment

Apart from the rate of unemployment, it is of interest to know how the labour market is structured in terms of major sociodemographic and socioeconomic variables across the European countries. Further, knowing how many men and women are active in regular full-time or part-time employment and how many are confined to atypical or even informal types of employment is useful. Briefly describing major types of employment may be useful.

Regular standard employment usually involves employees, including civil servants, all officially registered self-employed people and members of (academically trained) professions, whose jobs are based on permanent (not temporarily limited) contracts. The term atypical employment has been proposed as an umbrella concept that contains different types of less stable, less regular employment. Although these atypical forms may be widespread and, thus, even typical in low- and middle-income countries (38), their prevalence is considerably lower in most countries in the WHO European Region. The most frequent kind of atypical employment is temporary employment. Here, the relevant criterion refers to a contract whose duration has been fixed from the beginning. Temporary employment can also refer to a specific period during the year (seasonal work) or to contingent work (such as work on call). People holding temporary employment are often exposed to workplaces with poor quality and low safety, their social and health insurance is often

evidence now indicates that men and women who are deprived of a core social role in adult life have elevated susceptibility to premature morbidity and mortality. Further, research has elucidated major pathways leading from extended experience of loss and deprivation to diminished health, by focusing on health-damaging behaviour and on the psychobiological processes elicited by stressful adversity. Finally, preliminary information indicates that the health of those who managed to return from unemployment into regular work improved.

not appropriate if provided at all, and their earnings are generally lower than those of permanent employees with similar job tasks. To emphasize these disadvantages, the term precarious employment has been proposed (8,39). Highly precarious employment is likely among people who work in the informal sectors of the economy. These workers are usually excluded from contribution-based benefits and respective social protection, and their earnings (if any) are poorly regulated. In agriculture and other types of producers' cooperatives, informal employment is relatively frequent. Similarly, informal employment typically characterises home-based work, which is often paid by the piece. If regular earning is a criterion of definition, then homework too is a type of informal employment that is still not yet compensated for in a number of social security systems in the European Region. Finally, legal employment is distinguished from illegal employment, which bypasses any officially registered and publicly protected economic activity.

In an effort to link labour market processes with social inequalities in health, connection between segmented labour market theories and the quality of employment and work conditions has been proposed (4,40). Accordingly, a primary labour market usually offers regular standard employment and "good" jobs defined by appropriate economic and noneconomic rewards including healthy work attributes, whereas a secondary labour market is characterized by the prevalence of

non-standard or atypical employment, often temporary or contingent, offering “poor” jobs with poor wages, poor control and increased health risks. In this view, labour markets are “the central mechanisms for allocating workers into jobs and allocating job resources and rewards to workers” (4). As access to the labour market is socially stratified, it

acts as a far-reaching determinant of work and employment-related social inequalities in health. In this perspective, in addition to the main driver – socioeconomic position – gender, immigration status, ethnicity and age can also operate as criteria of segmented labour markets (4).

2.2.1.1.3 Labour force participation among men and women

Information on the prevalence of these different conditions of employment remains fragmentary because some of the relevant data are not available publicly or are not registered systematically by official statistics of the countries in the WHO European Region. Nevertheless, some crucial aspects are indeed documented, and we briefly discuss a few major trends, such as labour force participation among men and women and age-related prevalence of employment.

Gender differences in labour market participation are obvious in most European countries. The current (2010) employment rate in the EU27 countries is 58.2% among women and 70.1% for men, again with the known north–south European gradient (more women employed in northern European countries). Thirty per cent of women but only 8% of men work part-time (31). Part-time work among women is often not freely chosen but results from a gendered division of access to the labour market, with a predominance of men holding full-time jobs as breadwinners (41). This situation has huge policy implications for improving working conditions among women and reconciling women’s work with family life (42) (see Chapter 5).

The most recent European Working Conditions Survey (41) provides additional relevant data on gender segregation and variation in employment rates, including the proportion of employed people with part-time contracts, across European countries. This survey documents that the labour market remains highly gender-segregated with regard to sectors, occupations and levels of hierarchy, including salaries and wages, although the participation of women in the labour market has increased in recent past in all countries across Europe.

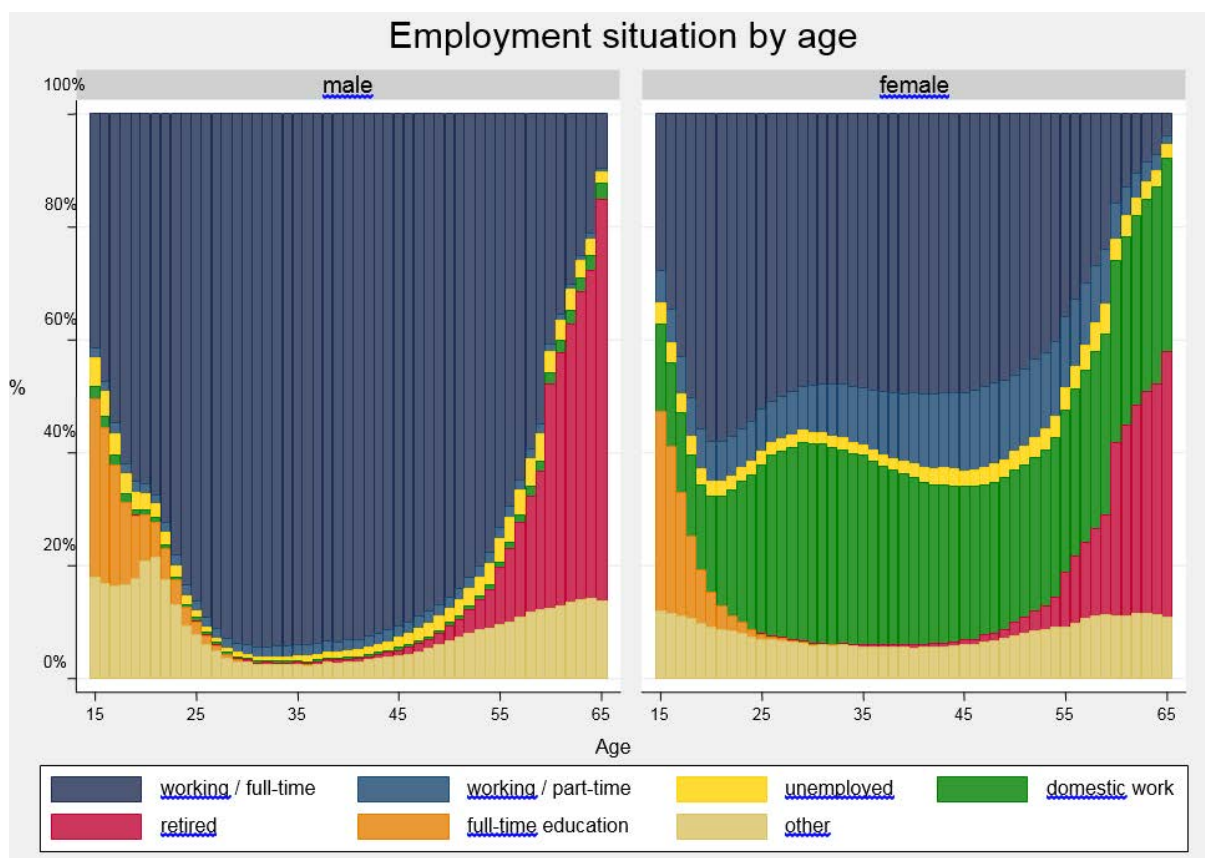
Although annual statistics cannot produce robust estimates of long-term effects of gender differences in paid work, condensed information on labour market participation over the life course provides more useful insights. To date, several longitudinal epidemiological studies provide such data. Fig. 2 shows the results of one such study. The findings are based on the Survey of Health, Ageing and Retirement in Europe. This is a longitudinal epidemiological study covering representative population samples of men and women aged 50 years and older from 13 European countries (Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Italy, Netherlands, Poland, Spain, Sweden and Switzerland) (43). Starting in 2004, a second wave was completed in 2006 ($n = 32\,442$ participants), and in 2008 a retrospective (work) life history was conducted in which the main employment situations between age 15 years and age 65 years (or current age) were assessed for each participant (44). In Fig. 2, this information is compressed into a plot graph for men (left) and women (right). For each year, the proportion of respondents in full-time education, full-time work, part-time work, housework, retired or unemployed is displayed (including a residual category of other conditions) (45). Although the data reflect a pattern of labour market participation that was typical of the last decades of the 20th century it may still be instructive for at least two reasons. First, it demonstrates substantial differences in labour market participation over the life course between men and women, with fewer women maintaining full-time positions (and if so, for a shorter mean duration), with more women engaged in part-time employment, and with

a larger part of women involved exclusively in housework (more so in southern European countries). Second, many participants entered paid work with some delay, due to prolonged education periods, and the proportion of men and women leaving paid employment before the official retirement age increases steeply after age 50 years. These general trends are unlikely to change in a very short period of time.

In terms of occupational public health policies, it would be important to break

down the information presented in Fig. 2 according to characteristics such as type of employment, quality of work or the socioeconomic position of respondents. The following demonstrates that the burden of work-related disease and disability again follows a clear social gradient, with higher risks among those in less privileged positions. Equally important would be extending the respective data to other countries in the European Region, especially in the eastern part of the Region.

Fig. 2. Employment situation of men and women from 13 European countries (age 15–65 years): Survey of Health, Ageing and Retirement in Europe (45)



2.2.1.1.4 Labour force composition according to age

Labour markets in the WHO European Region are further differentiated by age stratification. Although demographic ageing generally accompanies the degree of modernization of societies, the different parts of the European Region currently show somewhat different patterns of the age composition of their population. For instance, countries in south-western and south-eastern Europe have higher percentages of young people than do countries in northern and central

Europe. However, these different patterns of age composition are not reflected in similar proportions of age groups within the labour market. This lack of correspondence is mainly due to high levels of unemployment at young age, to limited full-time employment of women and to the impact of differences in national pension systems and eligibility criteria for disability pension favouring or restricting early exit from paid work.

A recent overview of employment rates (per cent) at ages 20–64 years in 32 countries in the European Region (33) reveals substantial differences, ranging from almost 80% in Iceland, Norway and Switzerland to less than 60% in Croatia, Hungary, Italy, Poland, Romania and Turkey. All countries have a steep educational gradient of labour force participation. Taken together, in the EU27 countries, the employment rate is 48% among those with a low educational level (lower secondary at most), 70% among those with a medium level and 84% among those with a high (tertiary) level.

Among older working populations, these differences become even more apparent. Whereas the employment rates of older workers (55–64 years old) increased from 1998 to 2008 in almost all countries with data, large differences between countries still remain. In this case, countries with low employment rates of older workers not only include several of the economically less developed countries (with the lowest rates

in Hungary, Poland and Turkey) but also economically more advanced countries with generous pension systems, such as Austria, Belgium, France, Greece and Italy. Denmark, Estonia, Finland, Iceland, Latvia, Norway, Sweden, Switzerland and the United Kingdom have high rates (31). Early exit from the labour market again demonstrates a steep social gradient (see section 3.3).

The ambitious policy targets of employment (by age, sex and part- and full-time work) have not yet been reached by a majority of European Union countries. The situation is probably more critical in most of the other countries of the WHO European Region. Even among the people in regular employment, the quality of work varies substantially according to sector of employment, sociodemographic and socioeconomic conditions.

Disadvantageous conditions are expected to accumulate among those engaged in atypical employment. The following section addresses some aspects of atypical employment.

2.2.2. Atypical employment and earning inequalities

Many adults in Europe work in atypical forms of employment because of two different trends. In economically less advanced countries, atypical employment in terms of seasonal work, temporary contracts, informal work, contributing family work and other forms of non-standard employment is relatively widespread. In some countries, these forms extend to illegal work, including child labour. Foreign workers and unskilled parts of a country's population are at high risk of being engaged in these forms of atypical employment. In this context, men and women migrating from lower-income countries to higher-income countries – most often in search of income security – are often exposed to precarious, non-standard forms of employment and exploitation at work. For instance, women at risk of trafficking for sexual exploitation or women hired for domestic work warrant particular attention. Nevertheless, at the policy level, several countries in the WHO European Region have not yet developed legal measures against these forms of exploitation, such

as by signing and ratifying the Council of Europe Convention on Action against Trafficking in Human Beings or Palermo protocols to the 2000 Convention against Transnational Organized Crime (Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children, Protocol against the Smuggling of Migrants by Land, Sea and Air and Protocol against the Illicit Manufacturing and Trafficking in Firearms, Their Parts and Components and Ammunition). Similarly, child labour is a type of precarious work that continues to be of special concern in several countries of the WHO European Region. Although quantitative estimates are not precise, child labour is still prevalent despite violating human rights and its adverse long-term effects on developmental health (46).

Migrant workers are probably the most vulnerable group exposed to atypical employment and its adverse effects on health. Foreign-born workers are vulnerable to coercion into precarious employment

conditions within certain sectors as a result of their irregular and undocumented legal status (47). Although there is substantial policy concern about improving their situation, research evidence on migrant workers' health is still scarce. Many of the research findings reported in Chapter 3 may particularly apply to this group. The situation of migrants is particularly problematic in countries undergoing rapid social, political and economic change, such as countries in the eastern and southern parts of the European Region. The following illustrates the scope and severity of precarious work under conditions of rapid political change, illustrated using the results from two case studies on health workers in these subregions.

A second trend of expanding precarious work concerns high-income countries, where new

2.2.2.1 Migrant workers

The migrant worker population is growing internationally, and in some parts of the WHO European Region in particular. Updated estimates for all countries are not available but, for instance, in OECD countries in Europe the migrant worker population increased from 3.5 million to almost 6 million workers between 1998 and 2007, with a sharp increase in some southern European countries (48). Migrant workers are a major concern for occupational health policies because a large majority are exposed to hazardous adverse employment and working conditions, a low degree of social protection and a high burden of work-related health risks (49). The risks associated with job instability and unemployment, atypical or precarious employment, temporary employment or even informal and illegal employment often accumulate among migrant workers, mainly due to a low level of skill and training, lack of alternative choice in the labour market and lack of organizational or trade union protection. However, the European Region has two types of migrant workers: emigrant workers with low skills and qualified workers (such as health workers and in various other service sectors) who are able to compete with the country's native workforce or fill in underserved professional sectors (such as nursing and home care) in high-income countries. The former group is

forms of atypical employment emerge as a result of labour market deregulation and liberalization in the context of neoliberal economic policies and globalized competition. These new types include subcontracting, marginal self-employment, freelancing, on-call jobs, training contracts and other forms of temporary contracts. In general, women, younger people and people with less education carry out atypical jobs more often.

Both trends are not well represented in official labour force statistics and deserve special efforts of enquiry, surveillance and documentation. For example, there is a case study on young adults in a high-income country, Italy, where a longitudinal cohort study documents the long-term risks of entering the labour market via atypical employment.

clearly of major concern for social inequalities in work-related health, particularly in western European countries (see the special case in central and eastern European countries below).

Immigration into countries of the WHO European Region is a huge problem. In general, migration streams come from southern to northern European countries or from eastern to western countries. However, after the economic and political changes in central and eastern Europe, emigration started to be transformed into immigration. For instance, in the Czech Republic in 1999, less than 1% of the population consisted of foreigners. This proportion increased to more than 4% by 2009, with most being employed but a substantial minority being self-employed or working as entrepreneurs. The question of how to adequately regulate and manage economic immigration turns out to be one of the most challenging tasks for the Czech administration.

As mentioned, the work and employment conditions of low-skilled immigrant workers are often extremely poor (47). Several initiatives have been developed to implement policies, regulations and standards of securing safe and less hazardous jobs at the international level. These include providing basic health care, insurance and fair wages.

Given the extensive burden of work-related diseases and injuries among migrant workers, policy efforts have a high priority in any attempt to reduce social inequalities in work-related health (48) (see Chapter 5). Intervention studies evaluating the possible health benefits resulting from increased preventive and interventional actions among migrant workers have not yet been carried out to our knowledge. Moreover, few in-depth longitudinal studies are available to date to estimate the work-attributable

burden of disease among migrant workers. Many studies in this field use qualitative methods with small samples rather than longitudinal cohort studies. Moreover, there are considerable problems in clearly defining the target populations. Evidence from existing epidemiological studies of occupational cohorts in more-privileged conditions therefore provides an empirical basis to be extrapolated to the less-privileged, underresearched group of migrant workers.

2.2.2.2 Atypical work in the eastern part of the WHO European Region: the case of health-care workers

Little is known about changes in working conditions and workers' social and economic security in the eastern part of the WHO European Region since 1990. The overall economic situation in certain countries put them on a par with several low- and middle-income countries. In 2002 and 2005, the ILO together with Public Services International, the global trade union federation representing public sector workers including health workers, conducted two major studies on health workers in countries in the eastern part of the WHO European Region (50–52). The studies examined the effects of neoliberal policies, health sector privatization and changes in health workers' working conditions and social and economic security since the USSR collapsed. We briefly discuss these studies here, since they illustrate the impact of sociopolitical and economic change on work and health, specifically in the context of atypical (temporary) work. The 2002 two-part study examined changes that occurred between 1990 and 1999 and was the first detailed study of the impact of privatisation and health sector reforms on health sector workers in eastern Europe and countries of the former Soviet Union from a workers' perspective. The investigation included four in-depth country studies (Czech Republic, Lithuania, Romania and Ukraine) conducted in hospitals and polyclinics, consisting of interviews with health union representatives and interviews with employer representatives, and a survey of the majority of health workers' trade unions in 25 countries in the eastern part of the WHO European Region where health trade unions responded on

behalf of their members. Survey data were complemented with data from ILO country-level surveys and published literature.

The findings showed strong and growing multiple forms of insecurity among health care workers. Low levels of state investment in health care left already impoverished populations across the subregion even more vulnerable and without access to basic health care, medicines, and dental care, with sexually transmitted infections, HIV, TB and numerous chronic diseases made worse by diminished public health structures, lack of training of health care professionals and general deskilling of the health workforce. A total lack of public sector expenditure in certain countries (such as Armenia, Belarus, Kyrgyzstan, Republic of Moldova and Ukraine) was closely associated with poor security for health workers.

Between 1990 and 1999 there was a widespread fall in income relative to national average wages. Wage arrears were common. These circumstances led workers to take secondary jobs, under-the-table fees for service and work long periods of overtime. In many countries, income from secondary sources accounted for more than one third of total income. In some countries, health workers were forced to migrate for employment. Under-the-table or direct payments made workers' income unreliable and increased disparities among health workers. In the Russian Federation, direct payments accounted for 40% of all expenditure by people seeking health care.

The research revealed that workers faced widespread fear over increasing job insecurity because of not knowing government plans to restructure (and mainly privatize) the health sector. In some countries, the introduction of temporary work contracts left workers with no guarantees for the future. Presenteeism (remaining at work despite having manifest symptoms and health problems because of anxiety about negative consequences) was widespread because workers fear losing their job or receiving a reduced wage. Administrative leave was found to be extensive, where hospitals and clinics told workers to not come to work because they could not pay them (such as Armenia, Kyrgyzstan and the Republic of Moldova).

Training increased in some countries to meet new demands such as EU accession but was not available for all health-related occupations or for all workers and was declined in some cases.

Trade union membership rates had significantly declined in much of the subregion, weakening the voice of workers. The results of collective bargaining and negotiation varied enormously in their usefulness across the subregion.

Overall, across the subregion, health workers felt demoralized and humiliated, feared the future, feared that life would get more difficult, were concerned about job security and voice security and felt there was less protection for them than before 1990. A high level of reported stress was linked to economic hardship, threats of job losses and the strains of working in a health care environment.

The 2005 study surveyed health trade unions across the eastern part of the European Region together with all other global regions (52). It analysed the impact of public service liberalization on workers' economic security, addressing changes that took place between 1993 and 2003. This study addressed three main themes: (1) workers' social and economic security; (2) the quality and accessibility of public services; (3) the relations between government, foreign and domestic capital, trade unions and civil society groups for particular areas of public services.

The findings from the investigation revealed several drivers for the liberalization of health services around the world. These included public sector and health sector reforms, the World Bank, the International Finance Corporation and Multilateral Investment Guarantee Agency and the General Agreement on Trade in Services, which opened national service markets to international companies. The study found that the changes that have taken place within public health services as a result of liberalization have led to a reduction in the workforce in many countries, thus increasing their workload while reducing job security. Women were disproportionately affected by job losses, especially women with lower levels of training. Moreover, women were more affected than men by redeployment because they tend to be less mobile. The introduction of competition into the public health sector has been accompanied by measures to make the workforce more flexible and cheaper, with less employment protection and a loss of collective bargaining agreements (52). With these changes came significant deterioration in working conditions for health workers, resulting from pressure to cut costs and be more competitive, the use of performance-related pay, staff reductions, longer work hours, increased work pressure and pressure to spend less time with patients. Worse working conditions following marketization reforms were reported in Armenia, Poland, the Republic of Moldova and Slovakia, partly due to the continued use of old equipment, underinvestment and decentralization without adequate resources allocated to local health services. The study found that, in many countries, health workers' status has changed as a result of health sector reform, sometimes moving from being a public servant in an essential service to being part of a private company.

A close relationship was found between health workers' social and economic security and the quality of health services. In the eastern part of the European Region, the loss of income through late or non-payment of wages had the most immediate effect on the relationship between health workers and patients. Health workers often charged direct or informal fees for services that affected

patients' ability to access them. Payment or non-payment of the informal fee affected how a health worker treated the patient and the quality of care provided. Holding multiple jobs for economic survival grew between 1993 and 2003 because of non-payment of wages. ILO household surveys conducted between 2000 and 2004 revealed that paying for basic health services was the leading cause of households going into debt in many countries, particularly in eastern Europe (52).

Regulation is one of the most urgent priorities if the effects of the liberalization of health services are to be alleviated for both health service users and health workers and to

maintain and improve standards of care and working conditions. Overall, the erosion of health workers' social and economic security was found to directly affect the quality of care because of pressure faced by health workers to earn a living wage and to deliver services with reduced resources. The ability to pay for services is increasingly determining access to health care, favouring higher-income groups and leading to two-tiered, class-based systems of health services.

These studies indicate that, even in a relatively well-trained workforce, threats to secure employment and decent work can be substantial, which calls for far-reaching policy changes.

2.2.2.3 *New forms of atypical employment*

With the advent of economic globalization, some countries deregulated many standard or permanent employment contracts by increasing the flexibility and instability of job arrangements, whereas other countries restricted their liberalization to the atypical forms of employment. In Italy, this latter trend of partial and targeted deregulation has been established during the past two decades (53). Measures included introducing "work and training contracts" and promoting new forms of self-employment, subcontracting and other forms of marginal employment that strongly affected labour market entrants: young adults. As a consequence, atypical employment in Italy grew from about 6% in 1970 to about 18% in 2000, calculated as the proportion of all employed people. Many proponents of these changes argue that entering the labour market through atypical employment increases the chances of integration into "standard" regular employment later on, thus producing benefits to society.

It is important to empirically test this claim. In a comprehensive study, such a test was provided by analysing the probabilities of leaving atypical jobs in several cohorts of labour market entrants (53). For this, the career histories of seven cohorts entering the Italian labour market between 1970 and 2003 were explored. Their main findings are as follows.

1. Contrary to general expectation, the expansion of atypical jobs did not reduce

the relatively long time interval between education ending and entering the labour market.

2. Entering atypical employment was more frequent among young women than among young men but, contrary to expectation, was also more frequent among those with higher education.
3. The future prospects of obtaining a stable job among those starting with atypical jobs were not substantially increased. This became obvious when their position at age 35 years was analysed. The young adults who waited a long time to enter the labour market directly via a stable job were better off than those starting early with atypical jobs, remaining more often in precarious employment even at age 35 years.

In part, this latter effect is due to the fact that standard employment positions were increasingly replaced by less-protected, lower-paid non-standard jobs, a trend that has been documented in other European countries as well (54,55). Thus, many young men and women remained trapped in repeated precarious jobs. The authors conclude their study (53) by indicating that "the peculiar partial and targeted deregulation in the Italian labour market led to new and seemingly enduring cleavages in the society. For the younger cohorts, it becomes increasingly difficult to fully integrate in the protected insider labour market."

2.2.2.4 Inequalities in earnings

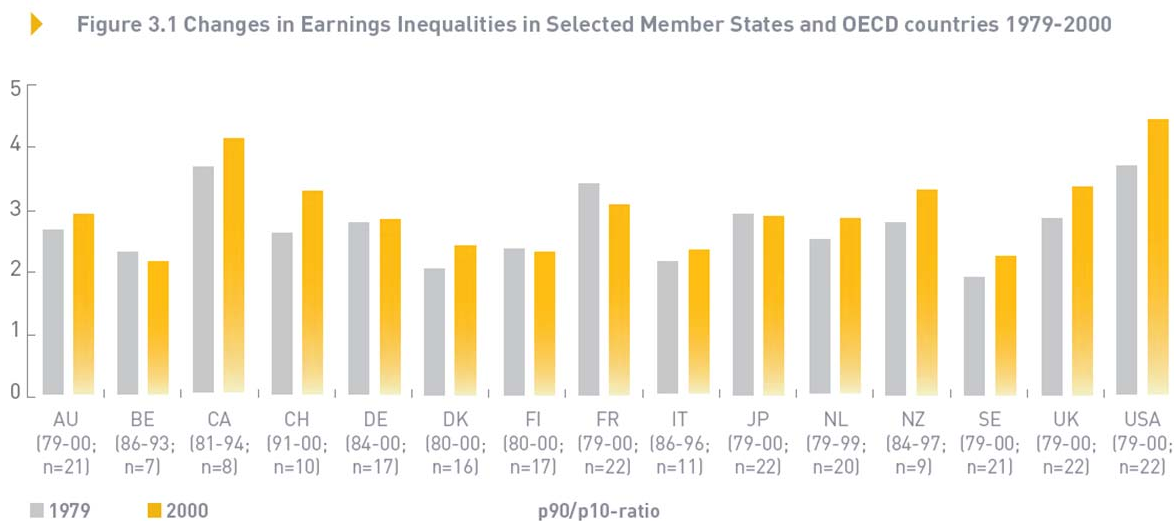
Atypical employment is often associated with a low level of social protection, exclusion from full citizenship rights and low earnings. Analysing these disadvantages in more detail is therefore instructive. Several recent research projects on inequalities in earnings in the EU shed some light on this latter aspect (56).

Although robust evidence indicates a general growth of income inequalities in European countries and beyond (55,57), delineating the contribution of labour market conditions to this trend is important. The annual growth in income shares during the past 10 years by the top quintile of the income distribution has been twice as large as that of the bottom quintile in some leading OECD countries (55). During this period, people in paid

employment in the lower quintiles of the income distribution were likely to experience stagnation or even decline in their real wages. In fact, since 2003, one third of European workers have experienced a decline in real wages, and “almost two thirds of European workers saw their wages growing, on average, less than their labour productivity” (58).

Fig. 3 demonstrates changes in inequalities in earnings in selected EU countries and OECD countries between 1979 and 2000. The measure of inequality is the interdecile ratio of the lower boundary of the top decile (p90) to the upper boundary of the bottom decile (p10) (59). With a few exceptions, inequalities in earning increased over time, most obviously in English-speaking countries.

Fig. 3. Inequalities in earnings, expressed as the interdecile ratio of the lower boundary of the top decile (p90) to the upper boundary of the bottom decile (p10), in selected countries, 1979 and 2000



Source: Sjoberg (2009)⁽⁴⁰⁾ from EQUALSOC

NB: (i) the period relates to 1979 and 2000 or as close as data permits. NB: (ii) the measure of inequality is the inter-decile ratio.

Source: Commission of the European Communities (56).

Inequalities in earnings can be attributed to the segmentation of the labour market into a regular, stable, well protected and well trained workforce versus an atypical, less-protected, less-skilled workforce and to the growing imbalance between pay increases and productivity increases. A further research project supported by the EU, INEQ, has analysed this imbalance, and their findings can be summarized as follows: “European

workers, especially the lower paid, have not benefited from increases in productivity in recent decades. Furthermore, an increasing proportion of European workers have experienced a decline in total income.” (56). This inability of labour to capture an adequate share of productivity gains, particularly among working people in lower socioeconomic positions, has far-reaching consequences for health and well-being as

well. As will be demonstrated, chronically stressful work in terms of a mismatch between high effort spent at work and low reward received in turn is associated with

elevated risks of a range of stress-related disorders and thus contributes to a widening social gradient of health (see section 3.2.3).

2.2.3. Labour and social policies

Restricted opportunities for labour market participation and exposure to precarious employment, to occupational hazards and to poor quality of work are unequally distributed all across society, leaving those with lower socioeconomic positions at higher risk. Since these conditions contribute to adversely affecting health, they need to be addressed in policy efforts to reduce social inequalities in health. Labour and social policies play a key role in such efforts, and the development and implementation of these policies vary widely across the countries in the WHO European Region. One way of facing the heterogeneity of policy developments concerns their classification according to welfare state regimes. Traditionally, the institutional arrangements linking state, market and private families in coping with major threats and unequal opportunities occurring during people's life-course include measures such as pension insurance, health insurance including sick leave pay, rehabilitation services and disability pensions, unemployment benefits, measures protecting people from severe poverty, education measures, child care and care for older people. The level of generosity of and entitlement to such welfare provision varies largely between countries. Several classifications have been developed to categorize countries according to their main criteria of generosity and entitlement. The classification proposed by Esping-Andersen is best known (11). It distinguishes between three ideal types of welfare state regimes: the social-democratic, the conservative-corporatist and the liberal types. The first is characterized by institutionalized

redistribution in which the welfare state provides universal social rights. The second emphasizes the obligations of social partners and stresses the principle of subsidiarity. The third is characterized by reduced provision of welfare state measures while strengthening private welfare services (6). Complementary classifications have been proposed, including a southern European regime characterized by fragmented social protection systems and strong support from family systems (60).

However, in addition to these global welfare state classifications, more specific work- and employment-related national policies need to be further identified. Such measures include active labour market policies (such as investment in further qualification and training and providing jobs to older workers), employment protection and wage replacement rates during unemployment, providing health care and rehabilitation services to sick and disabled members of the workforce, policies that guarantee compliance with standards of decent work, as defined by ILO, and policies that provide basic occupational health and safety services to working populations (61). Recent cross-country comparisons document substantial differences in the quality of work and employment and in their effects on workers' health according to the availability and quality of such policies (62–64). Overall, in such countries as the Nordic countries and the Netherlands that have implemented health-promoting work and employment policies more thoroughly, employed populations exhibit better health than in countries with neoliberal policies (62,63,65).

Great differences in the development of occupational health and safety continue to prevail in the WHO European Region. These differences concern the infrastructure: the

institutional, financial and legal background of service provision, the human resources delivering services, their numbers, training, competencies, tools and qualification,

and the organizational context of service provision, such as affiliation with primary care, specialized occupational health and safety units or centres, affiliation with special companies, enterprises or branches etc. The tasks and competencies also vary widely, but usually include surveillance, risk assessment, providing information and educating workers, developing initiatives for workplace health promotion, preventing occupational hazards and accidents, first aid interventions and further measures for preventing disease (such as immunization) and for rehabilitation (such as return to work among chronically ill and people with disabilities). A variety of stakeholders are involved in different ways and with different effects, most importantly governments' special agencies in occupational health and safety (and additional ministries, such as health and labour ministries), the provincial and local municipal authorities, including safety representatives, the social partners (employer organizations, workers' representatives and trade unions), and associations of occupational health professionals (61).

Given regional variation and differences in levels of development, the WHO Regional Office for Europe has initiated a series of efforts towards harmonizing and promoting occupational health and safety, in accordance with the respective EU policies, and in line

2.2.3.2 Occupational health and safety development in south-eastern Europe

Based on the Regional Cooperation Council (RCC), south-eastern Europe covers the traditional Balkan countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, the Republic of Moldova, Romania, Serbia, the former Yugoslav Republic of Macedonia and Turkey), related to the geographical, historical, social and political concept and sharing some common challenges due to major social, political and economic transitions. Among these challenges, the introduction of the market economy with privatization, together with a dramatic reduction of employment opportunities, major political crises and war conflicts were particularly relevant.

with the adopted WHO Global Plan of Action on Workers' Health. Among these efforts, the network of WHO collaborating centres and national focal points, and the development of regional networks, such as the Baltic Sea Network, the Northern Dimension Partnership for Public Health and Social Well-being, and the South East European Network on Workers' Health deserve special attention. In these networks, relevant policy initiatives are elaborated and implemented, framed by continual exchange with occupational health researchers.

It is not possible, in this context, to describe the different occupational health and safety systems (66) or to enumerate the changes induced by national initiatives under the umbrella of these networks. The most important achievements are incorporated in the recommendations of this report (see Chapter 5). However, a more detailed case report from the South East European Network on Workers' Health illustrates the opportunities and constraints of developing occupational health and safety from traditional to modern stages, as demonstrated in the next section and, in more detail, in Annex 5. This case report is supplemented by a short summary of recent developments in the north-western region of the Russian Federation.

These countries face an economic, social and political challenge of ensuring 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 indicate low job security and protection, especially in industrial and agricultural sectors.

According to the data obtained from the national statistical offices in the countries, south-eastern Europe (including Turkey) includes more than 50 million workers (active labour force 15–64 years old). Providing healthy and safe working conditions

and equal access to occupational health and safety services is considered a major challenge. High levels of unemployment aggravate this situation, with the highest levels in the former Yugoslav Republic of Macedonia and Bosnia and Herzegovina (more than 30%). Wide variation in economic, social and health-related conditions between the south-eastern Europe countries constitutes a main feature of this subregion.

The health system and policy in most of the south-eastern European countries have been based on a social and public health approach in health policy, related to the local health service model, with community governance. In contrast, the health systems in the eastern countries (Romania and Bulgaria) as well as Albania have been based on the former USSR (Semashko) model related to the centrally planned and governed health system. The South-eastern Europe Health Network was established in partnership with the WHO Regional Office for Europe and in the framework of Social Cohesion Initiative of the Stability Pact for South-Eastern Europe, acknowledging the challenges related to the health needs of vulnerable populations in south-eastern Europe. The health and safety of working population is considered a priority area, and WHO and the ILO initiated a project to build the capacity of the health systems of south-eastern Europe countries to address occupational health risks.

Major aims of developing national occupational health and safety systems in south-eastern European countries include (1) the need to reorient and upgrade the occupational health and safety policies and practices, (2) strengthening disease prevention and control of traditional and new occupational health hazards (stress at work, unhealthy work organization and equipment – threats to human health and well-being), (3) the prevention of occupational accidents and diseases, improved rehabilitation of workers with ill health and disability, and the promotion of work ability, specifically among vulnerable groups of workers. In accordance with policies and strategic documents, legislation needs to be improved, harmonized and implemented in the framework of specific

national programmes of occupational health and safety policies.

The principles guiding access to the EU are reflected in occupational health and safety legislation, and this process has been successfully achieved in almost all south-eastern European countries. Almost all south-eastern European countries have adopted comprehensive, modern occupational safety and health acts in line with EU Framework Directive 391/89/EEC and the basic ILO Occupation Safety and Health Convention, No. 155. In fact, many south-eastern European countries have made progress in fully integrating occupational health and safety functions in their national legislation, ensuring compatibility with EU and ILO occupation safety and health framework regulations and best practices 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 increase in materials and human resources.

Moreover, almost all south-eastern Europe countries have ratified the ILO Occupational Health Services Convention. Although occupational health and safety law typically stipulates the employer's obligation to organize services and workers' entitlement to services, health care law has generally stipulated the provision of and more detailed content of services (61). Employers should primarily cover the financing of occupational health and safety services, since it is regulated in the occupational health and safety legislation in all countries. Some south-eastern European countries have special occupational health and safety insurance (such as Croatia), while general health insurance covers treatment of the occupational diseases and accidents at work (such as Bosnia and Herzegovina, Serbia and the former Yugoslav Republic of Macedonia).

The countries of south-eastern Europe have a strong tradition of providing occupational health services for the whole working population. The institutions and senior experts have remarkable experience and

competence in the content and methods of comprehensive occupational health. Due to the reorganization of the systems for health and other services, the structures for service provision had largely disappeared and the existing occupational health resources are partly underutilized.

The south-eastern European countries that originated from the former Yugoslavia had advanced occupational health systems incorporating both curative and preventive aspects. This strong tradition of a public health approach to occupational health has been weakened during the transitional 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 during the transitional period. Public and private suppliers provide occupational health services in selected south-eastern European countries, but quality management is often inappropriate.

ILO has supported the countries (regionally and individually) with specific projects and programmes aiming at developing policies, regulations, institutions and human resources for occupational health and safety. The main substantive areas are employment policies, institutional development including strengthening of inspection, national programming for occupational health and safety 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.

One of the very important ILO country activities is the Decent Work Country Programme. The basic aim of the Programme is to promote decent work both as a productive factor and an essential element for the development of the social and labour sphere in the country: creating jobs, guaranteeing rights at work, extending social protection and promoting social dialogue are its main aims.

A final important topic concerns delivery systems and infrastructure for occupational health services. Occupational health and safety provision is covered by either health care or safety and health at work in most

of the countries. Occupational health and safety is a typical intersectoral activity that requires intersectoral policy and governance by the health and labour ministries. Despite its critical importance for any country, its priority is 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 regulation. The development of occupational health and safety infrastructure differs within south-eastern Europe depending on the overall stage of societal reform, economic development, political priorities, financial development and stage of EU accession. The mean coverage of companies with occupational health and safety varies widely among south-eastern Europe countries (20–70%), and increase in occupational health and safety coverage is related to progress in EU accession (Croatia (now a member) and the former Yugoslav Republic of Macedonia). Services have been maintained in most large companies, whereas those in small enterprises, among self-employed people and in the agricultural and informal sectors have remained poor despite the high risks in these areas.

The emphasis on curative services (occupational medicine) is a special challenge for occupational health and safety in south-eastern Europe, and preventive activities should focus on the workplace and not only on health examinations. Another challenge is the coverage of occupational health and safety, especially of the underserved sectors.

Having this in mind, the basic occupational health service concept, supported by the WHO Regional Office and ILO, provides an appropriate solution, but needs feasibility testing and adjustment to national circumstances (61).

Employers should primarily cover the financing of occupational health and safety services, since it is regulated in the occupational health and safety legislation in all countries. The main principle provides financing 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. Solutions for financing services for less-organized sectors are still open. Overall, the total number of active occupational health physicians and, in particular, of occupational health nurses, is considerably limited given the challenges mentioned above.

Rantanen (61) analysed the strengths, weaknesses, opportunities and threats for south-eastern Europe in occupational health. Based on this assessment, specific recommendations for this region can be

proposed (see Chapter 5). South-eastern Europe has demonstrated its impressive capability of developing an effective subregional approach to occupational health and safety. It has benefited from cross-border learning within the framework of the South-eastern Europe Network on Workers' Health, providing regional collaboration of the occupational health institutions and from WHO national focal points in south-eastern Europe, under the WHO Regional Office for Europe.

2.2.3.3 Occupational health and safety development in the Northwestern Federal District of the Russian Federation

Even more pervasive changes in occupational safety and health services and systems become evident from a recent report on the Northwestern Federal District of the Russian Federation (67) in the framework of the ILO Decent Work Technical Support Team and Country Office for Eastern Europe and Central Asia. The objectives of a respective pilot project are the introduction of decent and safe work systems through international harmonisation and good governance and the reduction of occupational accidents and diseases due to poor working conditions by implementing occupational safety and health management and risk assessment systems. Of special importance in this regard is preparing new occupational safety and health training modules, ready for inclusion into the curricula of Russian Federation training centres, consolidating and expanding the introduction

of modern occupational safety and health management systems and practices at enterprises and increasing occupational safety and health awareness through continued provision of promotion, information and consultations on areas related to occupational safety and health, such as occupational health services, occupational accident insurance, health promotion at work and migrant workers (67).

Preliminary evaluation demonstrates that these programme activities were able to increase the efficacy of occupational health services and thus need to be urgently expanded and implemented in less developed areas of the Russian Federation and other countries in the eastern part of the European Region.

This chapter briefly described the economic and political contexts of employment, work and health in the WHO European Region. Starting with an explanatory framework of the effects of economic change on work-related health, some major variation in employment and working conditions among these countries was identified, indicating mainly different stages of economic development. This variation concerns the extent of labour force participation (unemployment rates), the age stratification of the working population, the division between male and female labour market participation and the prevalence and types of atypical employment, including

inequalities in earnings. In general, countries in the southern and eastern parts of the WHO European Region have poorer working and employment conditions than countries in the northern and western parts of the Region. The same applies to the availability and quality of occupational health and safety services and the implementation of related policies. Evidence derived from the most recent European Working Conditions Survey indicates substantially lower employment rates in countries such as Croatia, Greece, Hungary and the former Yugoslav Republic of Macedonia than in northern European countries and high proportions of employees

2.3 Summary

on temporary contracts in several countries in the southern and eastern parts of the Region (41).

To illustrate this variation three cases were selected for more detailed analysis: atypical work among health care workers in the eastern part of the European Region, progress in and challenges of occupational health and safety services in south-eastern Europe and the increase in inequalities in earnings during recent years in selected EU countries.

These developments and variation occurred in the context of economic globalization and

an associated trend towards deregulation, privatization of formerly public institutions and weakening of the regulatory role of the state as well as of trade unions. Although these developments may contribute to increasing the work-related burden of disease, they also offer new options of flexibility and innovations in employment arrangements and may favour evolving forms of social dialogue and corporate responsibility. The next chapters deal with these obviously ambivalent aspects in more detail.

3. Employment and working conditions and health inequalities: a review of evidence

This chapter analyses how adverse employment conditions (section 3.1) and adverse working conditions (section 3.2) affect health. Further, the barriers to returning to work and the health gains of successfully returning to work are discussed, based on evidence from respective research (section 3.3). The content of this chapter is essentially based on the results of systematic reviews conducted by authors on the respective topics. However, we consider these systematic reviews to be selective

for two reasons. First, covering all aspects of the complex web of causation between employment, work and health in a single limited report is virtually impossible, as discussed earlier (section 1.2). Second, since the main aim of this report concerns health disparities and ways of reducing them across the social gradient, we selected evidence relevant to this aspect. The main principles of the process of knowledge generation have been already described (section 1.3).

3.1. Adverse employment conditions

3.1.1. Unemployment

Although research on the adverse health effects of unemployment has a long tradition, the causal link of this association is still debated to some extent because powerful selection factors may interfere with causal processes. It is therefore important that prospective research control for selection due to reduced health as well as selection into jobs with elevated risks of redundancy. Investigations based on a prospective study design, including a healthy working population at study onset to be followed over a period of several years and adjusting the observed health effects for baseline health and other confounding factors are the methodological prerequisites for producing sound evidence. Fortunately, the results from several such epidemiological studies are now available.

The first group of studies with a prospective epidemiological and demographic orientation were at the national level and used time-series analysis of aggregate data. These

include the studies in the United States for the Joint Economic Committee of the United States Congress in 1976 and 1984 (68,69). The respective results demonstrated a temporal relationship between national levels of unemployment and age-adjusted all-cause mortality rates, cardiovascular mortality rates and suicide mortality rates over six years following economic recessions in which unemployment was elevated. These long-term associations of unemployment and mortality at the national level were further supported by a study in England and Wales, with elevated unemployment rates being related to increased age-adjusted mortality rates over the subsequent 10 years (70). These studies controlled for the impact of national income and wealth (GDP per capita) as well as inflation and the short-term impact of rapid economic growth. Subsequent studies of historical change in unemployment and mortality rates (especially cardiovascular) in other high-income countries supported

the earlier studies in the United States and United Kingdom. These countries included: Australia, Belgium, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand and Sweden (70–74). For the entire 20th century, this finding was again confirmed, with respect to historical time in the United States in 2005 (75). Most recently, the country-level relationship between unemployment and decreased life expectancy has been confirmed for 31 industrialized countries for 2008 (76). A multivariate regression model of life expectancy at birth including several macroeconomic, policy-related and health behaviour-related factors found a strong linear association between the set of country-related variables and life expectancy. In the European and industrialized country studies, adjustment was made for GDP per capita as well as alcohol, tobacco and dietary risk factors.

However, these studies faced several critiques at the methodological level (such as the problem of ecological fallacy) and at the content level (4). For instance, other investigations found higher mortality rates during economic phases of expansion rather than contraction or recession, perhaps due to an increase in risky lifestyle behaviour induced by higher standards of living (77,78).

On the other hand, there is strong evidence of elevated mortality effects of job loss at the level of matched administrative data. Sullivan & von Wachter (79) analysed data on workers' employment history during the 1970s and 1980 from the Pennsylvania Unemployment Insurance Office in the United States in combination with official death records from 1980 to 2006. Their analysis concentrated on men who were previously continuously employed but were forced to leave their firm due to downsizing between 1980 and 1986. "For this group of workers, mortality rates in the year after their displacement were 50–100% higher than what would have been expected in the overall population age-adjusted mortality rates. While the mortality rates declined sharply over time, the study estimated that displacement continued to increase the annual death hazard by 10–15% for as long as 20 years after the job loss." (4). Further, a longitudinal study of involuntary job loss

among older workers observed elevated risks of myocardial infarction and stroke (80).

Rigorous epidemiological studies at the individual level of analysis were conducted in England and Wales (81–84) and in several Scandinavian countries (85–91). They document elevated risks of fatal or non-fatal cardiovascular or cerebrovascular events or of all-cause mortality among unemployed people versus permanently employed people. People unemployed long term have particularly high risk. The effect sizes of the hazard ratios are usually quite substantial: 1.5–2.5.

Many less rigorously conducted studies support these results, demonstrating elevated risks of a range of other negative health outcomes. For instance, unemployment increases rates of depression, particularly among young people. Parasuicide rates among young men who are unemployed are substantially higher than for those in employment (92). In a longitudinal study in England, unemployed men had excess mortality from suicide (93). In the British Household Panel Study, unemployment among people in the most disadvantaged social group was related to an elevated risk of incident-limiting illness (94). Other studies indicate that unemployment results in impaired mental health, specifically depression (95,96), whereas becoming depressive in turn increases the probability of future unemployment and loss of income (97). Becoming re-employed is generally associated with a reduction in disease severity (90,98) but not in the rate of mortality (83).

Facing unemployment does not always exert worse effects on mental health than staying at work. In a methodologically impressive longitudinal study containing seven waves of data from 7155 respondents of working age in Australia, Butterworth et al. (99) observed that the effects of jobs with very poor psychosocial work quality on mental health were no better or even somewhat worse than those attributed to unemployment. Thus, the notion that any job is better than none may need to be revised by paying attention to the quality of jobs that are available under such circumstances.

Data on unemployment and health from countries in the eastern part of the European

Region are less common despite the aggravated conditions of job instability. In the New Democracy Barometer study analysing data from 13 countries, unemployment was statistically related to increase in functional limitations (66% increase) and poor self-rated health (73% increase). In the same study, income was also associated with these two health outcomes. The people in the lowest quartile of the income were more than twice as likely to have functional limitations and to report poor health (100). Leinsalu (101) reported an increased risk of reported poor health among Estonian men (odds ratio (OR) 1.70) and women (OR 1.39). Vikhireva et al. (102) reported an increased risk of non-fatal injuries associated with being unemployed, although this increase was explained in men when adjusted for other socioeconomic variables. A recent analysis of the prospective HAPIEE (Health, Alcohol and Psychosocial Factors in Eastern Europe) study found that unemployment statistically significantly increased the risk of all-cause mortality in Czech Republic, Poland and the Russian Federation (age-, sex- and country-adjusted hazard ratio 2.71) during six years of follow-up. Although further adjustment for classical risk factors, health behaviour and other socioeconomic characteristics reduced the effect of unemployment, it was still associated with a 71% increase in mortality hazard. This result is in accordance with an

effect range found previously in high-income countries (Pikhart, unpublished, personal communication).

In sum, compared with other social groups, people in the most disadvantaged social groups are at higher risk of developing depression as a result of unemployment. Once depressed, the individual has an increased risk of not becoming employed again or, if re-employed, has an increased risk of becoming unemployed again in the future. The loss of income in this vicious circle is substantial and hits those already the least able to absorb the shocks. To further punctuate the severity of the link between unemployment, depression and loss of income with the social gradient, once a person becomes depressed, even if the depressed individual becomes re-employed, depression-related symptoms may be reduced but not the risk of premature death. The body of research-based evidence reveals that these outcomes are socially constructed social injustice. These widely prevalent situations are unlikely to improve without policies that integrate a public health approach to preventing disease with policies that strengthen and equalize socioeconomic security across the countries of the European Region. Socially constructed policies can, by definition, be deconstructed or reconstructed (see section 3.3.1).

3.1.2. Atypical employment

Atypical work includes several types of less-stable, less-regular employment, such as temporary work or informal work. Since the quality of and safety at work as well as earnings are generally lower than in regular, permanent employment, these types of precarious work contribute to higher rates of ill health among working people. This applies to the old and new forms of atypical employment mentioned. In all these cases, job security is likely to be limited, and feelings of reduced security or even manifest threat, whether transient or recurrent, can interfere with the health of working people. Three interrelated lines of research explore these associations. First, studies were conducted to assess the health effects of

temporary employment, the most frequent form of atypical employment. Although temporary work may be considered beneficial in certain conditions, in most cases, and specifically in less-qualified segments of the labour force, this form of atypical employment accompanies reduced benefits and limited protection.

A second line of research is concerned with job instability and job insecurity as adversely affecting health. In the current globalized economy, this condition is widespread among working people all over the world, and it prevails in stable, standard forms of employment as well as in atypical and precarious work. However, in these latter

cases, job insecurity is experienced more often and more pervasively, as evidenced by studies of employed people whose jobs are threatened and who are facing redundancy. Nevertheless, temporary employment is also very often a form of insecure employment.

More recently, a third line of research has drawn particular attention to the health effects of downsizing, restructuring and outsourcing, not only among those who lose their jobs but also among those who survive these organizational processes. In fact, survivor syndrome has been coined to identify the specific risks of this group. Recent evidence from Spain indicates that a high score of employment precariousness is associated with elevated risk of poor mental

3.1.2.1 Temporary employment

Temporary employment means working on a fixed-term contract. This is common for about 15% of the workforce in Europe and is associated with increased risks of a variety of adverse health outcomes. Along with labour market flexibility, deregulation of labour markets around the world is a potential source of deterioration in workers' health in some of the new types of temporary employment. Although most studies suggest adverse effects on health, temporary work is sometimes associated with improvement in health (103), possibly reflecting effects of different labour market regulations in different countries (104) or the heterogeneity of circumstances in which people take on temporary work.

The risks associated with temporary work include increased occurrence of alcohol-related causes of death in both sexes and an increase in smoking-related causes of death among men, with hazard ratios ranging from 1.2 to 1.6 (88). Mortality risks are substantially higher if temporary work is continued involuntarily or in combination with feelings of dissatisfaction (hazard ratios ranging from 2.1 to 2.6) (105). A review of 27 studies on the health effects of temporary

3.1.2.2 Job instability and job insecurity

Although closely related, job instability and job insecurity are distinct. The former indicates objective conditions that reduce the continuity of occupational positions,

health, explaining 11–23% of the variation in poor mental health (39).

As a major contribution to this report, an updated systematic literature review on the findings of epidemiological studies was conducted that explored the adverse health effects of these three types of atypical or precarious employment. The review presented in Tables 1 and 2 in Annex 1 covers international studies from 1990 to 2011. Although we do not summarize these findings in detail, we nevertheless point to each one of these aspects in some detail, given the prominent role of these newly identified employment-related adversities for occupational health policy.

work found the most consistent associations for adverse effects on mental health (106). In addition, increased risks of accidents and musculoskeletal disorders were reported (107,108).

Although temporary work arrangements have tended to create jobs during periods of high unemployment in most European countries, this can adversely affect health. Most recent research has indicated that under equivalent working conditions, such types of employment tend to be associated with several health problems (107,109,110) such as distress (111), fatigue, musculoskeletal disorders (110,112), poor self-rated health (113,114), liver disease, mental disorders (115), absenteeism (110,112,116) and stress (110,116). Based on this, Denmark and the Netherlands have developed flexicurity in their labour markets, intended to promote flexibility to the benefit of employers and give greater job security to employees. However, this latter goal has not been achieved in all such programmes, and the respective policy implications therefore require careful consideration of positive and possibly less beneficial effects (see Chapter 4).

whereas the latter reflects the working person's experience of reduced job stability. Each component can produce adverse effects on health, but the combination results in

the most persistent effects. In the available research on this topic, mental health has been studied most often. Therefore, the review starts with this health problem.

A meta-analysis of associations between job insecurity and mental health outcomes included 37 study samples with 14 888 participants (117). Overall, an average correlation between job insecurity and mental health of $r = -0.24$ was found, thus pointing to a relatively modest association and precluding any indication of causal direction. The quality of study designs varied widely.

Prospective cohort studies provide the relatively highest level of evidence in this field, and several such studies supported the general result. For instance, employees with chronic job insecurity experienced over 2.5 years reported significantly higher mental health problems compared with employees with secure jobs at baseline and at follow-up (118). In another study, high job insecurity was associated with increased risk of depression, independent of but magnified by the co-occurrence of chronic work-related stress, as defined by the demand-control model (114). However, there are also exceptions to this general trend (120).

Anticipated job loss matters most if it is perceived subjectively as a threat. In accordance with this assumption, a study in the Netherlands found a higher incidence of mental ill health among the group of employees who declared their self-reported job insecurity, but no effect was observed among those who did not think they were at risk of job loss (121). This latter assumption was confirmed in an early longitudinal study of blue-collar workers, where a marker of physical health and atherogenic lipid profile was analysed (122). In small homogeneous subgroups of workers with chronic occupational stress over a two-year period a clinical relevant indicator of atherogenic risks, the ratio of low-density lipoprotein (LDL) to high-density lipoprotein (HDL), was significantly higher in the group defined by co-occurrence of objective occupational instability and subjectively perceived job insecurity compared with the remaining groups. Although the influence of difference in dietary habits could not be ruled out, additional findings support an effect of recurrent excessive activation of the

sympathetic nervous system elicited by work-related stress that significantly changes lipid metabolism.

There are very few sources of information for countries in the eastern part of the European Region. Job insecurity increases the odds of poor health by 31% in the Czech Republic, 39% in Poland, 56% in Hungary, and 27% in the Russian Federation (123). In recent analysis of representative samples of middle-aged employed men and women in the HAPIEE study in the Czech Republic, Poland and the Russian Federation, however, job insecurity was not related to systolic or diastolic blood pressure, total cholesterol or 6-year all-cause mortality (unpublished).

In summary, the evidence supporting a direct link between job insecurity and mental health is stronger than any link with physical health (120). Only one of the few prospective studies found a significant effect of job insecurity on short-term non-fatal myocardial infarction among women: the Nurses' Health Study (124). Finally, several studies indicate impaired self-rated health as an outcome of job insecurity (125–127). Since most studies are restricted to one organization or one country, a recent investigation deserves special attention because the association between job insecurity and self-rated health was analysed in a comparative approach across 16 European countries (123). The results of a cross-sectional design support the notion of significant effect in 9 of 16 countries. In the pooled data analysis, the odds ratio for poor health from job insecurity was 1.39, and this association was not reduced by adjustment by the main sociodemographic and socioeconomic factors. Additional research indicates that precarious employment leads to poor health via lower material well-being, physical demands, hazardous psychosocial working conditions, non-standard work arrangements and low social support at work. Precarious employment is also associated with high job insecurity, a known risk factor for poor mental health (8).

Job instability and job insecurity are often experienced during processes of organizational downsizing and restructuring, and research on these aspects has expanded very rapidly in recent years.

3.1.2.3 Experience of downsizing and restructuring

Downsizing and restructuring of organizations usually result from economic pressure but can affect areas of life other than the economic ones. One such effect is the occupational health and safety of individual employees, which may be compromised by this organizational measure. Moreover, the dismissal of parts of the workforce directly affects the life circumstances of employees, who often experience redundancy as a critical life event. It also affects the remaining workforce (the survivors), who have to cope with readjustment to changing working conditions, who may be faced with increased work pressure and job insecurity and who lost colleagues and team members from their everyday working environment. Both groups exposed to downsizing, those laid off and those surviving, might experience considerable stress from these threats and changes. For job loss, several investigations reported adverse health effects (88, 128–130) (see section 3.1.1). For the survivors, research has documented adverse effects on well-being and health as well, although this may be surprising at first glance. Feelings of guilt and injustice and fear of imminent redundancy at a later stage of the organization's development are among the potential reasons for reduced well-being (131, 132).

Despite some controversial findings, most studies support the assumption that organizational downsizing significantly increases the individual risk of ill health among the surviving employees. This applies to various health outcomes. First, sickness absence was elevated among the survivors of downsizing in several studies (133–136). In contrast, two studies report null findings or even a trend towards lower rates of sick leave under conditions of downsizing (129, 137).

Moreover, several investigations have studied adverse health effects using different physical or mental outcome measures. Those studies showed considerable health effects of downsizing on the remaining staff in relation to musculoskeletal disorders (134), disability pensions (138), physiological stress reactions (139), symptoms (140–142) and burnout (143, 144). In one widely cited study, the Finnish 10-town study of public employees,

Vahtera et al. (135) reported a 40% excess risk of all-cause mortality and an almost 100% excess risk of cardiovascular mortality among survivors compared with the risk of employees in stable organizations. More recently, the same research team found elevated rates of prescription of psychotropic drugs among employees with downsizing experience, particularly anxiolytic drugs among men (145). This finding is remarkable in a methodological perspective, since it was based on an external outcome derived from national registry data.

However, the present results should be evaluated with caution, since methodological limitations must be taken into account. For instance, an unresolved question concerns the long-term career prospects of survivors of downsizing. A large prospective registry-based study of men and women in Finland concluded that the survivors who subsequently remained in their positions in the downsized company did not exhibit increased mortality risk compared with the employees never exposed to substantial restructuring (146). Thus, it is important to analyse occupational trajectories over a longer period of time, where long-term job stability may compensate for the stress of temporal shocks produced by organizational downsizing and may even contribute to a slightly reduced mortality risk, as reported in this study (146). Moreover, few studies considered the impact of macroeconomic developments (periods of recession or expansion) on downsizing processes and their consequences for health.

Defining unambiguous outcomes in this field of research seems important. Since sickness absence data often contain health-related and non-health-related reasons for absenteeism, the fact that the evidence of associations between downsizing and sickness absence is mixed may not be surprising. For instance, in recent registry-based study in Norway covering a large part of the workforce from 2000 to 2003 found no support for increased sickness absence among survivors of downsizing (129). This finding could in part be explained by presenteeism masking the existing associations between downsizing and sick leave.

Studies on natural experiments are of special interest. A recent report from the Whitehall II Study in London documents a 60% elevated risk of work disability over a period of about eight years among the civil servants who had been transferred to an executive agency in the early 1990s ($n = 1263$; 27%) versus those who remained in the civil service ($n = 3419$; 73%). This elevated risk among those who were outsourced from a public company was stronger for men than for women (147).

Job instability and insecurity can also occur in rapidly expanding companies in addition to the more obvious processes of downsizing. A study in Sweden (148) found elevated odds ratios of long-term sickness absence and hospitalization of employees in the years following a period of rapid organizational expansion.

To summarize, survivor syndrome may be more frequent among working people who

face economic recession or periods of low economic growth, but equally among those exposed to rapid economic expansion, fuelled by privatization, trade liberalization and neoliberal policies. Although threats of job loss and experienced redundancy affect survivors' health in the short term, increasing work pressure, often in combination with unhealthy lifestyle, contribute to a rising burden of disease in the long term. The process of downsizing at the microeconomic level in single organizations or firms usually aims at reducing personnel costs, either as a strategic decision or as an acute response to business downturn. The problem of the adverse effects of downsizing is relevant in an internationalized economy with increasing competition, dealing with a globalized labour market and with rapid technological change (149).

3.1. Adverse working conditions

3.2.1. Occupational hazards and injuries

The most recent European Working Conditions Survey publication confirms that the reported levels of exposure to physical risks in the workplace have not diminished much during the past 20 years (41). This holds true for heavy lifting, vibration, tiring and painful positions, repetitive hand or arm movements, noise and chemical substances. Most of these risks are associated with jobs in manufacturing and construction, mostly held by men with few qualifications. Biological and chemical risks are also prevalent in the health sector, and posture-related risks are prevalent among service and sales workers. In 2010, almost one third of the study population was exposed to noise at work, at least intermittently. Moreover, 24% report exposure to vibration, 45% are working in painful, tiring positions and more than half are confined to repetitive hand or arm movements, mainly due to computer work (41). The European Working Conditions Survey report illustrates that exposure to these risks is unequally distributed across European countries, with particularly high levels in Greece, Hungary and the former Yugoslav Republic of Macedonia and low levels in Denmark, Ireland, the Netherlands

and the United Kingdom.

Two important questions emerge: what is the evidence of health consequences resulting from these types of exposure? To what extent do these occupational hazards contribute to explaining health inequalities? With regard to the first question, occupational medicine, or more broadly occupational health sciences, are the internationally established scientific authorities to deal with this topic. In fact, occupational medicine has a long and impressive history and has produced many insights with far-reaching policy implications in improving health and safety regulations at work. This has been achieved despite the methodological challenges in this field of research, such as addressing multifactorial causation and long latency periods and conducting extensive and long-lasting observational studies with demanding diagnostics. It is clearly beyond the scope of this report to review respective evidence at the level of single occupations or occupational sectors. The same applies to discussing how occupational health research affects policy in terms of regulations (such as concerning occupational diseases), safety

measures (such as exposure to asbestos, high level of noise etc.) or monitoring and surveillance activities (150).

The second question concerns the explanation of the social gradient of the health of employed populations across Europe. Substantial evidence indicates elevated morbidity and mortality risks from physical hazards at work among low-skilled manual workers and employed men and women working in precarious jobs (41, 151–153). This holds equally true for sickness absence (154) and disability pensions (155–158). However, since associations of these hazards with health are most consistently documented in the above-mentioned groups of manual workers and those working in precarious jobs, their contribution towards explaining

the health gradient across the whole of the spectrum of occupations is limited. For this reason, this report does not include a detailed review of empirical evidence of respective research, contrary to the review of study findings related to more widely distributed work and employment-related health risks, such as job insecurity, temporary work and other forms of atypical work and adverse psychosocial working environments (see sections 3.2.2 to 3.2.4 and Tables 1–3 in Annex 1). Nevertheless, with regard to policy implications and recommendations, the clustering of hazardous work and employment conditions among low-skilled, low-status occupational groups deserves special attention (see Chapter 5).

3.2.2. Risks related to work organization and working time

In addition to the physical environment and related work task hazards, the organization of work plays a major role in triggering occupational health risks, both physical and chemical hazards and injuries, and psychosocial adversity. The role of work organization in occupational health has received most important attention in intervention research and is thus covered more extensively in section 4.2. However, since no clear distinction can be made between work organization and major factors contributing to psychosocial adversity at work, the respective research is summarized here. This also applies to risks related to working time, which again are part of the companies' larger work organization.

In all European countries, working time arrangements differ between occupational groups, and some of these arrangements have been shown to have adverse consequences for the health and well-being of workers. This especially applies to shift work and long working hours. Although several regulations restrict the number of regular weekly working hours, there is a high prevalence of overtime work, irregular work and periods of commitment to extended working hours. In the recent panel wave of the European Working Conditions Survey report, about every tenth male worker reported working regularly more than 60 hours per week

(41). For special service occupations and professions, those performing on-call jobs, freelancers and several groups holding modern, less formalized atypical jobs, clearly distinguishing work from non-work periods in their daily life has become increasingly difficult.

Shift work is another frequent problem related to working time. Shift work is frequent in the production sector and in some service occupations and professions. Overall, in the EU27, the prevalence is 17% (33). A strong social gradient of shift work is obvious. Twenty-six per cent of low-skilled manual workers in this survey, versus 12% of skilled manual workers, report regular shift work. Similar trends were demonstrated in several studies (159, 160). In fact, shift work and long work hours are the two conditions that were most widely studied with respect to adverse health effects.

The results of several epidemiological studies suggest an elevated risk of cardiovascular disease (161–163) and of metabolic syndrome (164–167) among shift workers. Additional investigations demonstrate an elevated risk of accidents, particularly among evening- and night-shift workers (168). The reported health effects depend on the type of shift work, the rotation cycles and the duration of shift work, with marked increases

after more than 10 years of continued exposure (169). However, there are some inconsistent results, and the processes that may mediate the reported associations (sleep disturbances and mismatch between circadian rhythms, disturbed work–life balance and changes in health-related lifestyle) are still debated (161). Night shifts are particularly relevant as a potential source of work accidents, cardiovascular and gastrointestinal problems and eventually cancer (168,170–172). Potential links between shift work, chronodisruption and the pathogenesis of cancer are currently debated in international occupational health research (173).

Overall, as one review concludes, “Shift work could increase the risk of cardiovascular disease by several psychosocial, behavioural, and physiological mechanisms. The different pathways are interrelated and may also lead to other metabolic diseases by increasing the risk for atherosclerosis, metabolic syndrome, and type 2 diabetes.” (170). Combined effects of shift work and chronic psychosocial stress at work have been observed for coronary heart disease and for poor mental health (159,174).

Studies have documented adverse effects on health produced by extended or irregular work hours. For instance, working more than 11 hours a day is associated with a threefold risk of myocardial infarction (175,176) and a fourfold increased risk of type 2 diabetes

(177). Moreover, in jobs with an overtime schedule, the risk of injury is increased by 61% among American workers (178). In an 11-year longitudinal study among workers in Finland, atherosclerotic plaque growth in the carotid artery was proportional to the number of days worked per week and to annual working hours (179). A recent report from the Whitehall II study found a hazard ratio of 1.67 for acute myocardial infarction among the civil servants who worked 3 to 4 hours overtime each day for a period of about 10 years compared with those working normal hours. This effect was adjusted for a large number of confounders and was particularly obvious in the group of civil servants who did not exhibit high levels of established biobehavioural cardiovascular risk factors (180). Since the frequency of working long hours has increased in many high-income countries in recent years, the associated health risks need to be taken into account.

A further temporal factor concerns control of working time. Low control of working time is associated with reduced health (181), whereas increased working time control moderates the adverse health effects of stressful work (182). Again, these conditions of health risks related to working time interfere with psychosocial adversity at work. Given the significance of this latter aspect and the substantial body of knowledge accumulated during the past two decades, an extensive section addresses this topic.

3.2.3. Adverse psychosocial working environments

Psychosocial risks contributing to the experience of stressful work are now widely recognized as major challenges to occupational health and safety (183). With significant changes in the organization and management of work, in the composition of the workforce and in the economic context of work and employment, demands and threats increasingly challenge or even overtax working people’s capacity to successfully cope with them. As a result, almost one third of Europe’s workers report being affected by stress at work. In 2005, and again in 2010, every fourth participant in the European Working Conditions Survey believed that his or her own health is at risk due to work-

related stress (41). Given the costs attributed to work stress–related absenteeism, mental and physical disorders and disability pensions, significant developments at the policy level, internationally and nationally, have been achieved (see section 4.1). Although debates and controversies about the level and consistency of scientific evidence of a causal relationship between work stress and health are still ongoing, often operating against respective targeted policies (184,185), solid cumulative evidence indicates a causal association in terms of prospective observational epidemiological investigations based on theoretical models of work stress (see below) and based

on experimental basic science evidence (23,186,187). The available evidence based on studies with appropriate methodological quality therefore needs to be summarized, which is the aim of this section. A major

challenge of the scientific study of this problem relates to defining and measuring stressful work in terms of an adverse psychosocial working environment.

3.2.3.1 Theoretical models of an adverse psychosocial working environment

An adverse psychosocial environment at work cannot be identified by direct physical or chemical measurement. Theoretical concepts are needed to delineate particular stressful job characteristics so that they can be identified at a level of generalization that allows for their use in a wide range of different occupations. These concepts can be translated into measures with the help of social science research methods (standardized questionnaires, observation techniques, etc.) that meet the criteria of adequate reliability and validity of data collection. A variety of concepts that encapsulate adverse psychosocial working environments have been developed in occupational health psychology and sociology, social epidemiology and organizational sciences (188,189). However, only a few have been tested with convincing study designs (such as longitudinal observational investigations of initially healthy employed populations) and have addressed the social gradient in work and health. Among these, three models have received special attention in international research: the demand–control model, the effort–reward imbalance model and the model of organizational justice.

The demand-control model (13,190) posits that stressful experience at work results from a distinct job task profile defined by two dimensions: the mental demands put on the working person and the degree of control available to the person to perform the required tasks: decision latitude. Jobs defined by high demands in combination with low control are stressful because they limit the individual's autonomy and sense of control while generating continued pressure (high job strain). Under these conditions, following the experience of control and mastery, excessive arousal of the autonomic nervous system is expected to occur without any compensatory relaxation response. Conversely, active jobs are expected to be health-protective as they are defined by challenging demands

that accompany a high degree of decision latitude and learning opportunities, enabling individuals to experience positive stimulation, success and self-efficacy. A third dimension, social support at work, was added to the original formulation. In this formulation, the highest level of strain would be expected in jobs that are characterized by high demand, low control and low social support at work or social isolation (iso-strain jobs) (191). Extensive tests of the demand–control–(support) model showed that the concept, in its fully developed form, does not always predict poor health but that this is more often the case if single components are analysed (see below).

A complementary model, effort–reward imbalance, focuses on the stressful features of the work contract (192). This model builds on the notion of social reciprocity, a fundamental principle of all types of transactions that are characterized by some form of utility. Social reciprocity lies at the core of the work contract, which defines distinct obligations or tasks to be performed in exchange for adequate rewards. These rewards include money, esteem and career opportunities (promotion and job security). Contractual reciprocity operates through norms of return expectancy, in which effort spent by employees is reciprocated by equitable rewards from employers. The effort–reward imbalance model claims that lack of reciprocity occurs frequently under specific conditions. Failed reciprocity, in terms of high cost and low gain, elicits strong negative emotions and associated stress reactions with adverse long-term health consequences (see below). High-cost and low-gain conditions at work occur frequently if employed people have no alternative choice in the labour market. This is often the case among those with low socioeconomic position or low level of skills, among older workers and, more general, in a highly competitive labour market.

More recently, the concept of organizational justice has been linked to health outcomes in epidemiological studies. It distinguishes between three components of justice at the organizational level: distributive (the perceived fairness of the distribution of valued resources), procedural (perceived fairness of processes used to decide on relevant matters) and interactional justice (perceived fairness of being treated in organizations, such as from supervisors and colleagues) (193,194). The main effects of each one of these components on health are postulated, such that higher injustice goes along with higher risk of disease (see below).

There is some overlap between distinct components of each one of the three models (specifically demand and effort; or reward and distributive justice), but each approach was shown to explain elevated health risks independently (195). Importantly, the notions of low control and low reward are rooted in fundamental neuroscience research on links between social environment, emotional experience and the activation of brain circuits (196). All three models are measured by psychometrically validated, standardized questionnaires that are available in different languages. The reliability and factorial

Given the rapid growth of knowledge in this field of research, relying on published systematic reviews is not sufficient (12,193,203–208). Rather, findings from most recent original publications are added to already documented evidence. Table 3 in Annex 1 gives an updated review of international evidence linking each of the three theoretical models of an adverse psychosocial working environment (or their combination), based on the respective gold standard in this field of research: the prospective observational cohort study. The main health outcome variables are cardiovascular diseases and poor mental health (mainly depression), since the most robust evidence is restricted to these two disorders. The selection is also well justified in view of their huge contribution to the worldwide burden of disease. Here, we briefly summarize this impressive body of knowledge.

structure of the respective scales and their discriminant and criterion validity have been repeatedly confirmed (197–200).

Several attempts have been made to integrate elements of these models and to supplement them with additional components, such as by the Copenhagen Psychosocial Questionnaire (201), but current scientific evidence is largely based on the models described above or their extension (such as extending the demand–control model to the job demands–resources model (202)). Nevertheless, these models were developed in a specific context of economic and sociotechnical development and may need further adjustment because of far-reaching recent changes in the nature of work and employment. For instance, a critical appraisal concludes: “In the post-neo-Fordist era, with the flattening of organizational hierarchies and the spread of self-managing work teams, the demand–control pathway between occupational status/class and stress may be less significant. Rather, access to standard employment versus contingent employment appears to be the new pathway, and job and financial security associated with non-standard employment the primary source of stress” (4).

3.2.3.2 Current evidence

Concerning cardiovascular disease, most of at least 30 reports derived from prospective studies document elevated odds ratios of fatal or non-fatal cardiovascular (mostly coronary) events among those reporting job strain, effort–reward imbalance or organizational injustice (203,204,208,209). Overall, the risks are at least 50% higher among those experiencing psychosocial stress at work compared with those who are free from stress at work. The effects are stronger among men than among women and more pronounced among middle-aged than older working populations. Similar effects are observed for reinfarction among people surviving the first coronary heart disease.

In addition, several cardiovascular risk factors are associated with an adverse psychosocial working environment in terms of job strain and effort–reward imbalance: metabolic syndrome (210), type 2 diabetes (211), hypertension (212), elevated fibrinogen

(213,214), atherogenic lipids (122), obesity (215), health-adverse behaviour (216,217) and markers of dysregulated autonomic nervous and endocrine system activity (218–221).

A second, widely prevalent chronic disorder, depression, is associated with stressful work.

The large majority of results from more than a dozen prospective investigations confirm elevated risks of depression among employees with work-related stress in terms of these models, and odds ratios vary between 1.5 and 3.6, depending on the type of measure, sex and occupational group under study (222,223). Again, mental and biological pathways that may trigger affective disorder were analysed with regard to job strain and effort–reward imbalance, especially so for dysregulated patterns of cortisol secretion (218,224) and endogenous inflammation (225).

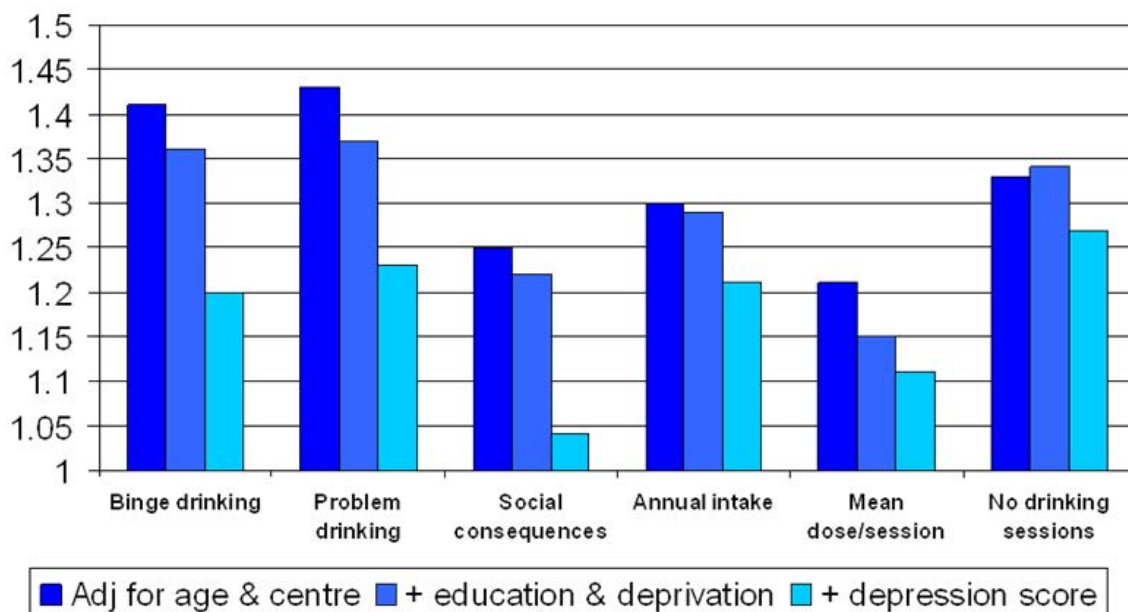
Other health outcomes significantly related to job strain, effort–reward imbalance or organizational injustice concern reduced physical and mental functioning (226), musculoskeletal disorders (227–229), sickness absence (154,209,230) and disability pension (155,158,231).

The literature summary presented above shows that the concept of psychosocial working environment and association with reduced health has not been studied widely in the countries of the eastern part of the European Region. Nevertheless, several (mostly cross-sectional) reports document associations between work stress and self-rated health or depressive symptoms (232–234) or depression (235), although Hrabá et al. (236) did not find any significant relationship between psychosocial working environment and self-rated health. Work-related factors have also been shown to be related to health behaviour. For example, Bobak et al. (237) showed how effort–reward imbalance was strongly related to various measures of excessive alcohol consumption, including binge drinking, problem drinking and overall annual intake. In this process, depression seems to play an important role, either as determinant, mediator or consequence of excessive drinking. Given

how alcohol has affected the mortality crisis among middle-aged men in the Russian Federation, this finding deserves attention (Fig. 4) (26).

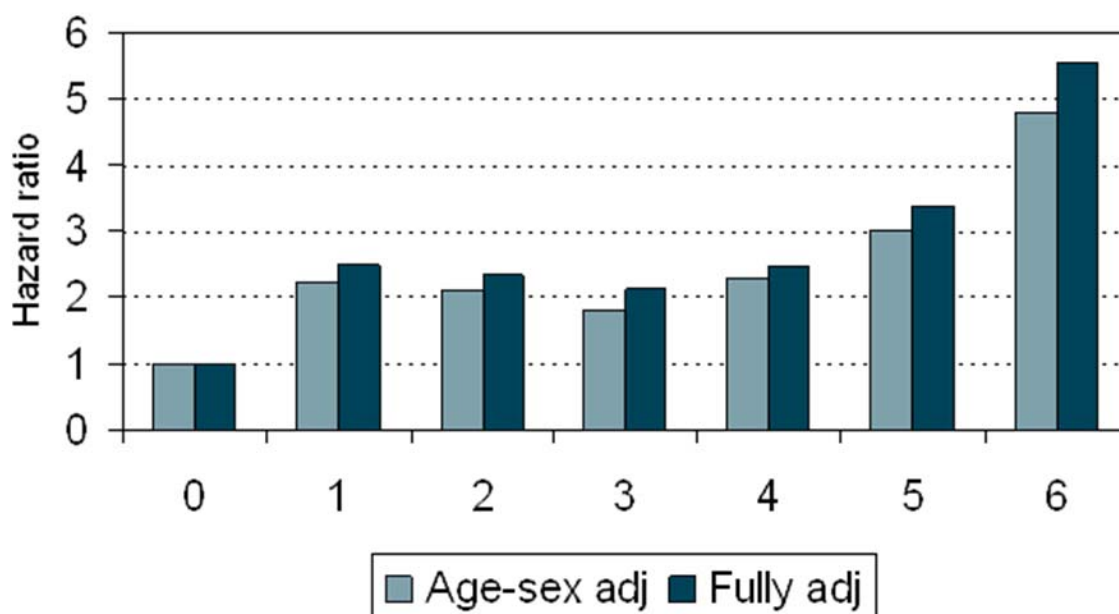
Few analyses of data from countries in the eastern part of the European Region have focused on cardiovascular endpoints or all-cause mortality. An analysis of data from a case–control study of myocardial infarction focusing on employed men in the general population of the Czech Republic found that decision latitude predicted myocardial infarction among Czech men in the direction predicted by the Karasek model, although job demands did not (238). Analysis of data on more than 1500 men and women from a 17-year follow-up of the Lithuanian MONICA (multinational monitoring of trends and determinants in cardiovascular disease) study, focusing on job demands–control and all-cause mortality found that those experiencing the highest imbalance between job demands and job control in their occupations had more than 5 times increased risk of all-cause mortality even after taking classical risk factors for cardiovascular disease into account (Fig. 5). Recent analyses of data from the HAPIEE study in the Czech Republic, Poland and the Russian Federation related psychosocial work characteristics to more subjective outcomes such as self-reported health or depression, whereas the association with outcomes related to cardiovascular disease was less clear. Higher job control and better social support at work were related to reduced risk of hypertension, although there was no association between hypertension and job demands or effort–reward imbalance. Similarly, the findings from the HAPIEE study related to mortality are so far inconclusive (probably due to low rates of mortality during 6-year follow-up) and do not support findings in western Europe. As this summary shows, evidence related to work-related psychosocial factors is very limited in the countries in the eastern part of the European Region due to the limited number of epidemiological data available and even more limited number of large prospective studies allowing studying temporal relationships between working environment and morbidity and mortality.

Fig. 4. Effort–reward imbalance and alcohol consumption: logistic regression analysis with elevated odds ratios of sex indicators of alcohol consumption according to work stress based on pooled data from the HAPIEE study in the Czech Republic, Poland and the Russian Federation



Source: Bobak et al. (237).

Fig. 5. Association between high job demands and low job control and all-cause mortality in the Lithuanian MONICA study



Source: Pikhart H, unpublished findings, 2011.

As mentioned, many of these new findings were obtained from longitudinal studies in north-western European countries, and in particular from the Whitehall II study in

England where the concepts of demand, control and support at work, effort–reward imbalance at work and organizational justice have been tested extensively, with a

variety of health outcomes and intermediary markers. Generalization of these results to other countries in the European Region may be limited, although increasing evidence suggests that some of these basic notions of a health-adverse working environment may matter in all rapidly developing countries.

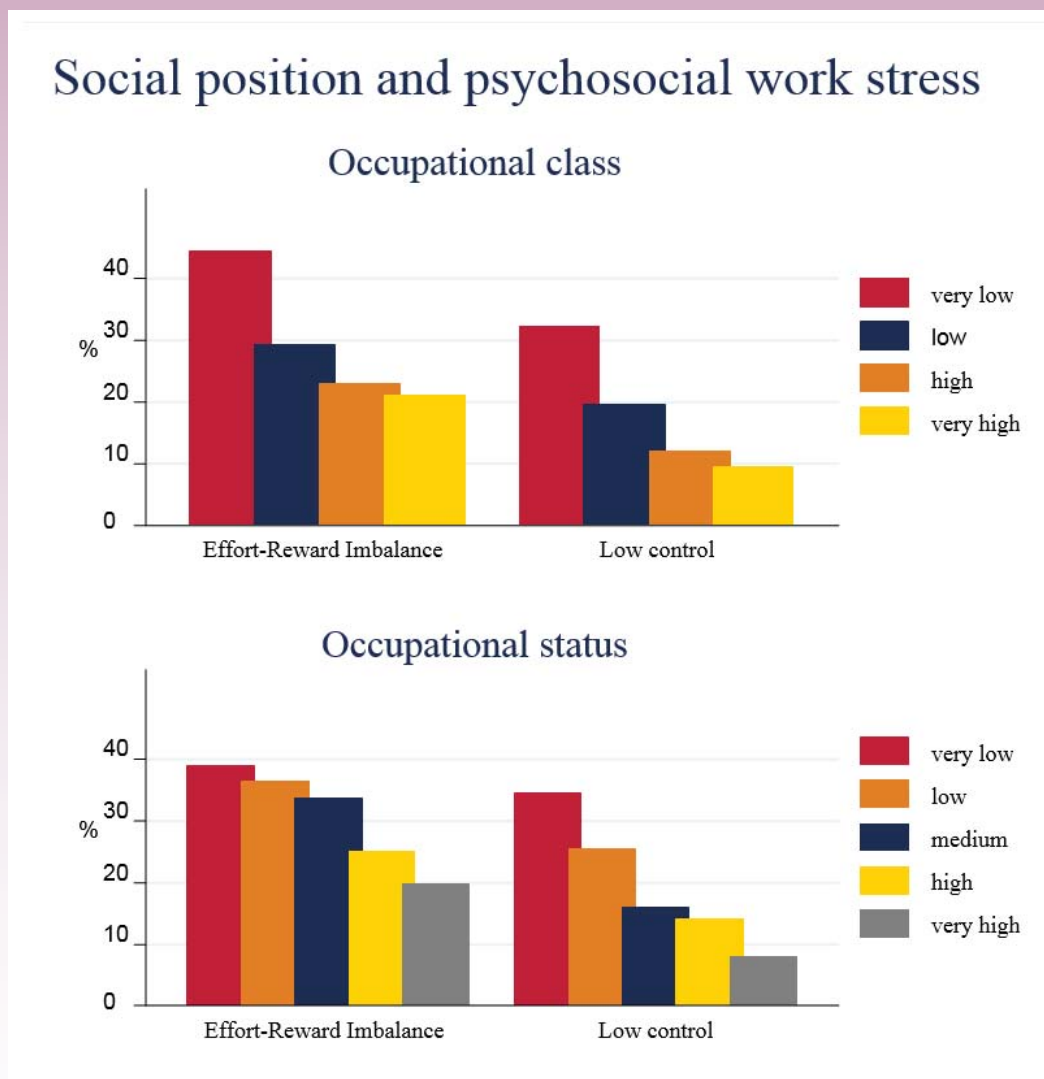
In conclusion, although several studies report negative results, there is a substantial body of scientific evidence on the health effects of an adverse psychosocial working environment. This provides a solid basis for developing a range of work- and employment-related interventions (see Chapter 4).

3.2.4 Role of work and employment in explaining health inequalities

As indicated earlier, the distribution of adverse employment and working conditions across working populations (unemployment, atypical employment including temporary work, job instability and downsizing, physical and chemical hazards and injuries and

risks related to working time) is strongly related to the social gradient. People in more disadvantaged groups are more often exposed than those in more privileged positions. Does the same apply to an adverse psychosocial working environment?

Fig. 6. The social gradient of adverse psychosocial working environments (effort–reward imbalance, low control). Data from the Survey of Health, Ageing and Retirement in Europe: *n*=6398 men and women aged 5–64 years from 12 European countries



Source: Wahrendorf & Siegrist (45).

Although this question has not yet been thoroughly researched, the components low control at work (job strain model) and low reward (effort–reward imbalance model) were repeatedly found to follow a social gradient in the expected direction (209,213,239,240). However, the prevalence of demand, effort and overcommitment is often higher among people with higher occupational status (197,198), resulting in a mixed pattern of evidence. Nevertheless, a recent comparative study of adverse working conditions, based on a sample of 6398 employed men and women aged 50 to 64 from 12 European countries, found a consistent social gradient of effort–reward imbalance and low control at work (Fig. 6) (40). Two indicators of socioeconomic status, occupational class measured according to the Erikson-Goldthorpe and Portocarero scheme, and occupational status, as measured by the Standard Index of Occupational Prestige Scale, were applied to define four (class) or five (status) hierarchically distinct groups. Both measures of an adverse psychosocial working environment, effort–reward imbalance and low control, closely follow a respective social gradient.

The next relevant question is whether, and to what extent, psychosocial adversity at work contributes to explaining social inequalities in health. Two approaches were applied in answering this question: mediation and effect modification.

The mediation hypothesis claims that the strength of the association between socioeconomic position and health is substantially weakened if the effect of work stress on health is simultaneously estimated in respective multivariate regression models. This observation would provide indirect evidence of a pathway from low socioeconomic position to high work stress to elevated disease risk.

Mediation is important, but it is not the only way in which a variable that predicts disease incidence in populations can contribute to explaining the social gradient in morbidity and mortality. The effect modification hypothesis posits that susceptibility to an exposure (such as health-adverse work and employment) is higher among employees in lower socioeconomic positions versus

higher-status people and that the effect size produced by the exposure is therefore higher.

Currently, limited evidence supports either hypothesis (151). For instance, using multivariate regression analysis to test the mediation hypothesis, low control at work was independently associated with incident coronary disease and with low socioeconomic status in the Whitehall II study (241). In a multivariate analysis, low control in the workplace accounted for about half the social gradient of coronary heart disease, since adjustment for this factor reduced the odds ratio of coronary disease in the low employment group from about 1.4 to about 1.2. Importantly, the relation between low control and coronary disease was not removed by adjusting for socioeconomic status (233,241). Similarly, in the analysis of Lithuanian MONICA data described above, the relation between low control and high demands and all-cause mortality was not reduced by adjusting for education and socioeconomic status.

The effect-modification hypothesis has been tested in several studies in which the effect on health of either high demands and low control at work or of high effort and low rewards at work was found to be greater in lower than in higher socioeconomic groups (191,242,245,246). For instance, in Germany, depressive symptoms were almost seven times as frequent in the lowest occupational group scoring high on effort–reward imbalance compared with the highest occupational group scoring low on effort–reward imbalance (244).

In conclusion, evidence supporting the two hypotheses, mediation and effect modification, has direct policy implications. Based on the first of these, reducing the adversity of working conditions and employment could be expected to tangibly reduce the social gradient across the whole population. The second hypothesis suggests that targeting interventions towards lower socioeconomic groups, where vulnerability is greatest, would be expected to reduce the steepness of the social gradient. We conclude that both approaches are needed. The policy implications of the second hypothesis are especially important. Achieving targets in relation to occupational health and

safety and reducing inequality requires a comprehensive strategy that is underpinned by the principles of disease prevention and health protection. It is important to highlight the interconnectedness of the physical and the psychosocial working environment and to direct policies and best practice

models towards a comprehensive approach to occupational health and safety. Such an approach should be linked to several outcomes, not only measures of health and safety but also measures of sustainability and development of the workforce.

3.3. Barriers to returning to work

In the conceptual framework depicted in Fig. 1, an important pathway (pathway II) was defined leading from health risks to adverse employment and working conditions. It was stated that a substantial part of the workforce in rapidly ageing societies has chronic disease or disability and that sustained efforts are required to reintegrate people with illness or disabilities into work and employment by appropriate rehabilitation measures. This section of the report addresses this challenge by reviewing some evidence from studies that highlight the barriers of return to work and their adverse consequences, with a special focus on social inequalities. We also demonstrate beneficial effects on health due to successful reintegration, but in both cases, scientific evidence is rather limited. Moreover, the question of how social inequalities interfere with the processes of return to work has received little attention so far.

National policies on medical and vocational rehabilitation and of providing disability pension vary widely across the countries of the WHO European Region. As incentives to return to work depend heavily on available social protection benefits, the rates of return to work cannot be easily compared across countries, even if type of disease or disability, age, sex and socioeconomic status are taken into account.

Rehabilitation processes have been studied in some depth in several fields of research, exploring the obstacles and opportunities to returning to work. This report selects two such fields as examples. The first example addresses return to work in case of mental disorders, and specifically depressive disorders, and the second example concerns the vocational rehabilitation of people with severe disabilities.

3.3.1 Return to work: the case of depression

From a global perspective, depression is a leading cause of premature mortality and of life-years spent with disability (245). The lifetime prevalence of major depression in Europe is estimated to be 13–16% of total populations (246), and every second depression manifests itself during young adulthood, before the age of 35 years. Given its chronicity, how it affects ability to work and the substantial risks of comorbidity, depression presents a major challenge to public health. The frequency and duration of absenteeism among depressed employees are high, and the same applies to early exit from paid work due to depression, with entitlement to disability pension. Those who are able to return to work have an extended time window from disease onset to recovery and regular re-employment, and only a minority regain their full capacity within the coming months.

These problems are exacerbated among working people with low socioeconomic status, since the prevalence of depression is substantially elevated in this group (247,248). Few studies have examined the social gradient of return to work among depressed people. Nevertheless, a recent longitudinal analysis from Finland is particularly instructive (249). Registry data from 141 917 public-sector employees, including their diagnosis-specific mental work disability (>90 days) were analysed, covering an observation period from 1997 to 2005. Some 3938 participants experienced long-term mental work disability, of whom 61% returned to work. Socioeconomic status (socioeconomic status) was inversely associated with onset of disability owing to depression and other mental disorders. High socioeconomic status was associated with a

greater likelihood of return to work following depression and some, but not all other mental disorders, whereas low socioeconomic status additionally predicted recurrent episodes of work disability (249).

According to this study there is a double burden among people with low socioeconomic status: they suffer from a higher incidence and prevalence of depression, and their chances of returning to work are lower, rendering them more vulnerable to a recurrent depressive episode. This 'vicious circle' calls for priority measures targeting high risk groups of the workforce.

Appropriate treatment was shown to have a substantial effect on return to work and improved work ability of employees suffering from depression (250, 251). A randomised clinical study in the USA demonstrated that early diagnosis and comprehensive treatment of depression in a large working population reduced the disease severity, increased the rate of return to work after treatment, and improved weekly work time to a significant extent in the intervention as compared to the control group (252). In addition to

early diagnosis and improved treatment of depression, investments into quality of work are needed to increase the rate of return to work of depressed people with lower socioeconomic status. These measures should also include cognitive-motivational training, since depressive people with low socioeconomic status often exhibit low control beliefs, pessimism and lack of self-efficacy. Today, efficacious cognitive-behavioural treatment strategies are available to reduce these adversities (253).

An important systematic review of studies on the health benefits of return to work among people suffering from major health problems that account for sickness absence and long-term incapacity concluded that work is generally good for their health and well-being (254). Nevertheless, this conclusion mainly applies to jobs with good quality of work. Therefore, the policy recommendations derived from this evidence should pay special attention to efforts to improve the quality of work among sick or recovering people with low socioeconomic status who are striving to return to work (see Chapters 4 and 5).

3.3.2. Return to work: the case of disability

In societies with growing proportions of older workers, preventing disability and rehabilitating people with disabilities are becoming issues of high priority in occupational health policies (255). According to the ILO, 72% of people with disabilities worldwide are of working age. The employment rate of people with disabilities is consistently lower than that of the overall population (256). The employment ratio of people with disabilities (employment rate of people with disabilities divided by the employment rate of the overall population) strongly varies across European countries, ranging from 0.33 in Poland to 0.76 in Norway and even 0.81 in Switzerland (257). In 2006, 6.7% of the employees in OECD countries aged 20–65 years received disability benefits and accounted for a total of about 1 working hour lost per week and employee. Further, the per capita costs of disability pensions seem to be constantly rising (258). The European Commission

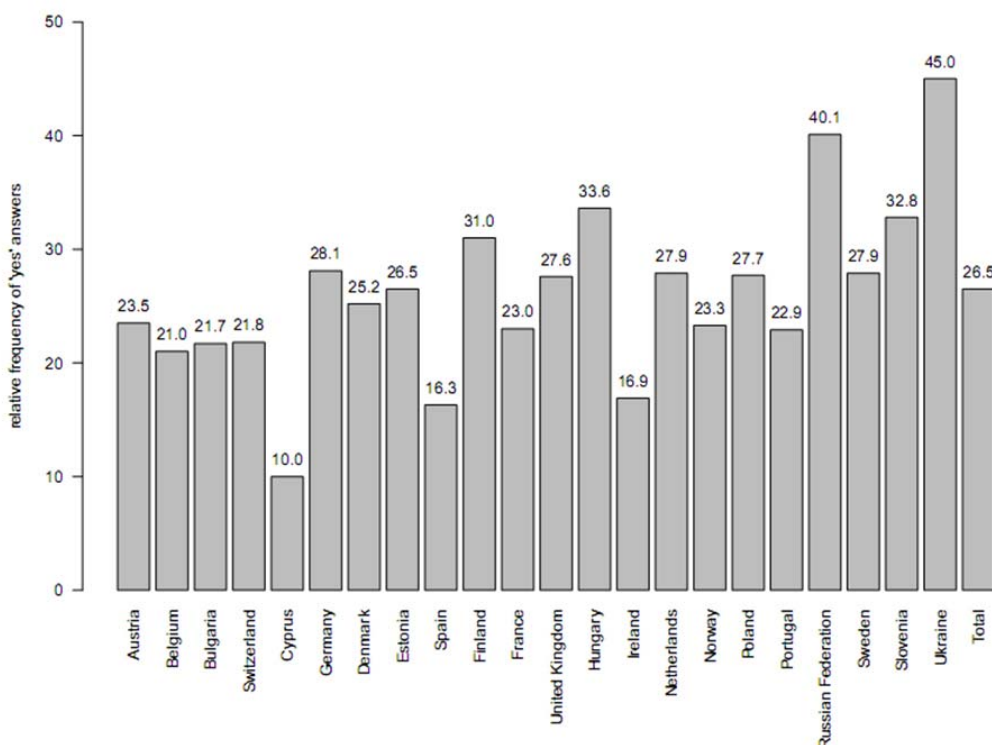
undertook several initiatives following the European Year of Disabled Persons in 2003 to ensure that disability-related measures are incorporated into several policy fields, including labour market participation. The labour market participation of disabled people is still severely restricted in many countries, and investment into strengthening return to work has recently received a higher priority in several EU countries. This is particularly important given the high prevalence of disability across Europe. Estimates from the EU Labour Force Survey and the European Union Statistics on Income and Living Conditions suggest that 14.7–20.7% of the EU population aged 16–64 years experience some limitation from a longstanding illness or condition. Of these, about 5% of both sexes report strong limitations (259). Additional information from the European Social Survey demonstrates substantial differences in the prevalence of disability between countries in 2006 (Fig. 7). The percentage of participants

of working age per country indicates how many people answered “Yes a lot” or “Yes, to some extent” when asked “Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem?” Again, between-country variation is large, varying from 10% to 45%, but in general, countries in the eastern part of the European Region are more affected than western countries.

Because of substantial country differences in the prevalence of disability, potentially also due to differences in measurement, and in social security policies supporting people with disabilities across Europe, assessing and interpreting comparative data on the return to work of people with disabilities is difficult. Further, the concept of disability has been revised quite substantially recently, moving away from a biomedically defined stable personal attribute (impairment) to a

biopsychosocial approach that considers the interaction between activity limitations and restrictions in participation and physical or mental impairments. Moreover, environmental barriers, including attitudes from reference groups, are considered relevant elements of an integrated view of disability (260,261). This broadened view has far-reaching implications for assessment of disability (in accordance with the International Classification of Functioning, Disability and Health), work disability policies and return-to-work programmes (262). The research evidence on the conditions and effects of return to work among people with disabilities is limited so far and mostly confined to musculoskeletal disorders, whereas mental and intellectual disabilities are largely understudied. However, several observations are available.

Fig. 7. Percentage of European Social Survey participants saying “yes, a lot” and “yes, to some extent” when asked: “Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem?”



Chi-square (Pearson) = 1106.2 ($P < 0.001$); phi = 0.16 ($P < 0.001$); $n = 42\ 595$

Source: Jan D. Reinhardt (2011), unpublished data based on European Social Survey 2006, Round 3, Version 3.

First, solid evidence exists on the social gradient of disability in working-age populations. Lower socioeconomic status is consistently associated with a higher prevalence of disability in studies in Europe and the United States (263,264). This fact goes along with the observation that people with disabilities with low socioeconomic status experience more difficulties in returning to work than socially more privileged people with disabilities. This contrasts sharply with legal requirements based on Article 27 of the United Nations Convention on the Rights of Persons with Disabilities, which guarantees the equal rights of people with disabilities to work in a labour market and working environment that is open, inclusive and accessible. Moreover, equal job opportunities and equal remuneration have to be provided, and professional rehabilitation combined with return-to-work programmes are expected to be in place. Currently, however, the wages of the working population with disabilities are significantly below those of non-disabled employees, and only half of this variation seems to be associated with differences in productivity (257).

Second, among interventions aiming at reintegrating people with disabilities into work, the programmes that included multi-component measures or interdisciplinary approaches were generally more successful than conventional approaches focusing more narrowly on legal requirements and medical procedures (265,266).

Third, people with disabilities who were expected to return to work following treatment were more likely to take up work early on if employers and case managers were involved in the rehabilitation process. In a randomized controlled trial, the respective time window between the intervention and control groups was substantial (65 days on average) (267). Joining a participatory workplace intervention crucially determined the early rehabilitation success. Such intervention programmes may be costly, but economic evaluations indicate that they end up being cost-effective (268).

Fourth, barriers to participating in the labour market or returning to work among people with disabilities are widespread and diverse. They include lack of access to educational measures, lack of physical access to the workplace, lacking technology to facilitate the work process and negative attitudes among employers and disincentives stemming from disability pension procedures (such as implying loss of benefits when returning to work) (256). In a study by Krause & Reed (269) among 781 adults with traumatic spinal cord injury aged 18–64 years and at least one year post-injury, 38% agreed or strongly agreed with the statement “Loss of financial benefits is a barrier to work for me”, and 33% thought that employers would not hire them because of their disability. The latter finding may be particularly due to a misconception of disability by employers equating disability and ill health (257). However, many people with disabilities consider themselves healthy (270), and it has been shown that employing people with disabilities positively affects the total workforce of an organization, such as by reducing absence and turnover rates (271).

In conclusion, improving opportunities to return to work among people with disabilities should be a high-priority goal, including studying the disincentives inherent in disability pension systems and programmes to change employer attitudes towards disability. The double burden of social inequality (higher prevalence of disability and fewer opportunities to return to work) requires disproportionate investment in favour of deprived socioeconomic groups among people with disabilities. One way of reducing the discrepancy between legal entitlements and the factual opportunity structure of people with disabilities is to improve monitoring, intervention and evaluation activities in this still under-researched field. This is an example of how scientific research can contribute to efforts to minimize inequalities in work and health within and between countries.

3.4. Summary

This chapter, together with the tables in Annex 1, has provided rich evidence on the negative effects of adverse physical and psychosocial work and employment conditions on mental and physical health.

This knowledge goes far beyond the traditional paradigm of occupational hazards and diseases, since it includes a growing body of research findings on adverse psychosocial working environments. The chapter started with a review of the burden of disease attributable to unemployment, emphasizing also the long-term consequences of youth unemployment. In a globalized economy, fluctuation between unemployment and temporary employment or other forms of atypical employment is frequent, and the health effects of these different types of exposure accumulate in a life-course perspective. The review of research findings shows that the link between work and health varies between the different forms of atypical employment. The effects are less consistent for temporary work than for the effects of job instability and job insecurity – conditions that rather consistently adversely affect mental health. These effects are aggravated in case of external threats due to downsizing and restructuring of companies.

Part-time work is harmful to health if people are forced to adhere to it. Women are often confined to part-time work given their more restricted choices in the labour market and their double burden of reconciling work and family life.

The traditional occupational hazards due to exposure to toxic chemical and physical substances, heavy physical load, dust, heat, noise and related occupational stressors aggravate the burden of work-related diseases, often clustering among deprived, less-qualified segments of the workforce, including migrant workers. Concerning

working time, earlier research has focused on the adverse effects of shift work, in particular in combination with the night shift, but more recently the noxious effects of regular overtime work became evident.

A health-adverse psychosocial working environment has been identified even in stable, more privileged occupational and professional settings. Job profiles defined by high demand, low control and low social support and employment conditions inducing high effort without providing adequate rewards have been shown to increase the risk of a variety of physical and mental disorders. Violence, harassment and organizational injustice may further aggravate stressful experience at work.

Although most studies exploring associations between work and health have focused on primary prevention – that is, on the determinants of disease – fewer investigations have focused on the barriers to chronically ill people and people with disabilities returning to work and their adverse effects on the course of disease. Findings suggest that intense measures of secondary and tertiary prevention are needed, at the organizational and personal level, to prevent further disadvantage or even exclusion of these vulnerable groups.

A social gradient operates at all levels of work and employment conditions relevant to health and well-being, leaving those in lower socioeconomic positions at greater risk. The higher frequency and duration of exposure to unfavourable working environments among these groups and their poorer coping resources are main determinants of work-related health disparities. These latter conditions are thus, major entry points for effective intervention.

4. Programmes and policies to reduce health inequalities at work: a review of evidence

Programmes and intervention policies that aim at improving health and well-being at work can operate at different levels. At the international or national level, occupational health and safety legislation and distinct policies (such as labour market, taxes, education, family and welfare programmes) define the broader contexts within which more specific actions can be implemented (see section 4.1.1). These specific interventions can be led by a variety of intermediate organizations, such as employer associations, trade unions, health services, professional groups concerned with occupational health and safety and associations or nongovernmental organizations dealing with organizational and personnel development and how they affect business. Finally, the intervention needs to be delivered within single organizations or companies, networks of interrelated firms or specific organizational groups (microstructural level) or within national or international policy frameworks (macrostructural level) (10,64).

Distinguishing primary, secondary and tertiary intervention measures is common. The primary intervention measures target general or specific groups of working people who are free from symptoms of disease or impairment. Secondary interventions address special risk groups in terms of occupational exposure, behavioural problems or reduced health and functioning. Tertiary interventions rehabilitate and reintegrate (formerly) sick or chronically ill people or people with longstanding absences from work for other reasons. At each level of intervention (primary, secondary and tertiary), two distinct, but often combined, approaches can be taken – changing the working environment and changing behaviour. The latter applies to groups of people or to individuals.

Interventions that aim to reduce social inequalities in health are commonly at the level of primary prevention, and they focus on the working environment rather than behavioural change. This is because large groups are targeted and beneficial and cost-effective interventions might be expected to produce favourable outcomes in a relatively short time interval. According to Semmer (272), interventions to change the working environment can be classified as environment-directed (ergonomic, noise, temperature, working time and broader technological and organizational context), task-directed (workload, division of labour, job autonomy and teamwork) and social relationship-directed (communication, conflict, leadership, esteem and social support). They usually include measures of organizational and personnel development (273). Since health-adverse behaviour (especially cigarette smoking, unhealthy diet and lack of physical activity) significantly contributes to explaining the social gradient for major chronic diseases (274,275), it seems appropriate to consider the potential for combining health-promoting behavioural change programmes and stress management training with approaches that change the working environment.

This chapter first focuses on policies and intervention programmes at the macrostructural level, involving international or national activities (section 4.1). Since their scientific evaluation is currently still restricted, the description and discussion of ongoing initiatives and projects is given priority, where we include some examples of innovative national programmes of healthy work and employment. Evidence of health-protecting or health-promoting effects of interventions is somewhat more

advanced at the microstructural level, and this is demonstrated in section 4.2, again with reference to some promising recent developments.

Since monitoring of adverse work and employment conditions as well as risk

assessment are an important prerequisite to action, the opportunities for and restrictions of routine assessment in labour and health statistics will be discussed, and new approaches are illustrated (section 4.3).

4.1. Macrostructural programmes and policies

4.1.1 Improving health at work: the PRIMA-EF programme

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 risk to workers' health and safety, such as psychosocial risks. This section discusses the findings from the Psychosocial Risk Management European Framework (PRIMA-EF) programme, a policy-oriented project, which focused 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, with particular reference to the fundamental WHO resolution on workers' global health (276). It reviews the current state of the art in relation to the policy context for managing psychosocial risks in Europe. It presents and discusses key regulatory and voluntary standards on occupational health and safety relevant to managing psychosocial risks in the workplace that are applicable to EU countries. Finally, it presents priorities for action identified through PRIMA-EF (for details see Annex 2).

International organizations and EU agencies have published reports and guidance on ways to deal with psychosocial risk factors based on the risk management approach. This approach is clearly advocated by European legislation and is described in some detail in supporting guidance (277–279).

Risk management in occupational safety and health is a systematic, evidence-informed, problem-solving strategy. It starts by identifying problems and assessing the risk that they pose; it then uses that

information to suggest ways of reducing that risk at the source. Once completed, the risk management actions are evaluated. To promote a unified approach, the European Commission funded the development of the PRIMA-EF programme, which incorporates best practice principles and methods of all existing and validated psychosocial risk management approaches across Europe. PRIMA-EF has been built on a review, critical assessment, reconciliation and harmonization of existing European approaches for managing psychosocial risks and promoting mental health at the workplace.

The PRIMA-EF model is also relevant to the wider macro policy level, since particular challenges in relation to psychosocial risks and their management also exist at the policy level. Policies and approaches relevant to managing psychosocial risks include regulatory standards, which comprise legal regulations (such as EU directives, national legislation and ILO conventions) and soft, non-binding or voluntary standards developed by recognized national, European and international organizations, which may take the form of specifications, guidance and social partner agreements.

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 to achieve occupational safety and health and economic objectives.

Three key overarching voluntary occupational safety and health standards are relevant to EU countries:

- European Commission guidance on risk assessment at work;
- ILO-OSH 2001 guidelines on occupational safety and health management systems; and
- the Occupational Health and Safety Assessment Series (OHSAS).

The European Commission's evaluation of the implementation of the main framework directive in the countries in the EU before 2004 (EU15) and its impact in relation to psychosocial risks (280) indicated that much still needs to be done about psychosocial risks such as work control, work organization and preventing unreasonably intense work pace and repetitive work.

Since 2004, 13 new countries have joined the EU. There were disparities between older EU countries and the new countries in health, social, and industrial relations issues (281).

In some EU countries, the national regulatory occupational safety and health frameworks are more specific 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.

The European Survey of Enterprises on New and Emerging Risks, which covered more than 28 000 enterprises in 31 countries across Europe revealed that, even though work-related stress was reported 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.

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 (282).

Participants in European social dialogue – European Trade Union Confederation (trade unions), BUSINESSEUROPE (private-sector employers), European Association of Craft, Small and Medium-sized Enterprises (small businesses) and European Centre of Employers and Enterprises providing Public Services (public employers) – have concluded voluntary framework agreements on such topics as work-related stress (283) and harassment and violence at work (284).

Clearly, these initiatives cannot replace but rather can initiate and reinforce more pervasive regulations of conflicting matters.

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 framework agreement on harassment and violence at work aims to increase the 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.

Additional examples of voluntary standards in the form of guidance (and also of relevance to the EU) have been developed by international organizations such as WHO and the ILO. These include guidance on psychosocial risks at work, work-related stress, violence and mental harassment. 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 and organizational levels and, hence, should be promoted, especially in the new EU countries, where existing social dialogue structures are weak.

Since its development, PRIMA-EF has been used in three ways: first, to develop training; second, to develop a guidance standard on psychosocial risk management; and third, to develop similar frameworks in countries outside Europe. A group of key stakeholders worked on developing a publicly available specification (PAS) from the British Standards Institution for psychosocial risk management. The guidance and recommendations in PAS 1010:2011 are intended to be incorporated into any occupational safety and health management system. PAS 1010:2011 aims to provide clarity in relation to both terms and best practice. In addition, PAS 1010:2011 aims to promote several best practice principles.

However, despite the merits of these recent developments, no information is available so far on the potential effects of these regulatory frameworks on reducing social inequalities in health within and between working populations in European countries.

4.1.2 Improving health at work: selected examples within countries



4.1.2.1 United Kingdom

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. 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: demand, control, managerial support, peer support, role relationships and change. These areas are assessed by an indicator tool, which defines thresholds reflecting the levels of good practice to be reached by organizations. Since it was implemented in 2004, the procedure has been widely used by companies and organizations and has been evaluated through several studies. Improvements following these evaluations include a stronger focus on manager behaviour, developing an indicator tool for competency in stress management, providing training materials and increasing investment in capacity-building. Overall, data so far demonstrate that the Management Standard approach has substantially increased the focus on preventing stress among employers and other stakeholders in the United Kingdom and, as a consequence, increased organizational policies and

procedures to deal with these issues (285).

The importance of work-related stress in the United Kingdom becomes also evident from several surveys, such as the Labour Force Survey and the Psychosocial Working Conditions Survey, which find that 17% of all working individuals define their job as very or extremely stressful (277). More recently, the British Standards Institution issued a guidance standard in the form of a publicly available specification on the management of psychosocial risks in the workplace (PAS 1010:2011) (277), which further supports interventional efforts.

However, although traditional occupational safety and health management activity is widely executed and the general awareness of relevance of work-related stress is widespread in the United Kingdom, the implementation of formal interventions within enterprises is still relatively modest and needs further substantial development. There is reason to assume that organizations and enterprises employing a qualified, skilled workforce are more likely to implement and practice these innovative interventions. As a result, social inequalities in work-related health may even be increased rather than reduced.

4.1.2.2 Netherlands

After a phase of awareness-raising activities in the 1990s, work and health covenants were established between 1998 and 2007, reinforcing sector-specific activities to reduce psychosocial and physical risks at work. Covenants are agreements between employers and employee representatives defining specific goals to be reached, in accordance with the ministry. More recently, these covenants were evaluated. The findings indicate that costs were reduced and that the results of the interventions were effective in the sectors that developed high-quality programmes (such as the police force and the hotel and restaurant sector) but not so obviously in other sectors.

In 2007, the Working Conditions Act was amended to request that employers conduct a risk inventory and evaluation but leaving further collective agreements a matter of policy among partners at the sector level. To date, several health and safety catalogues have been established that direct enterprises within these sectors to develop health-promoting work conditions. Nevertheless, a recent company survey indicates that a majority of enterprises in the Netherlands still do not adequately acknowledge the importance of improving the psychosocial working environment. Therefore, despite considerable efforts at national level, more investment will be needed (277).

4.1.2.3 Denmark

Denmark has also made some pioneering efforts to manage the psychosocial and physical working environment and its effects on workers' health. A new report (286) gives an excellent overview of recent developments, which are briefly summarized as follows. In 2007, the Danish Working Environment Authority launched a new strategy to improve the monitoring of work-related stress as part of the labour inspectors' job tasks. For this, 24 sector-specific guidance tools were developed that assess the most relevant risk and protective factors at work. The tool identifies the relevance and the frequency of sector-specific risk factors, assesses the

measures that enterprises undertake to minimize the respective risk factors and addresses the organizational consequences related to the specific risk factor (see section 4.1.3).

Based on this monitoring procedure, interventions can be developed in enterprises, and work inspectors assist these processes. Since 2007, this procedure has been extended to all enterprises in Denmark, supported by training and information campaigns. Moreover, specific task forces with expertise in the psychosocial working environment help inspectors in accomplishing these new tasks (286).

As a result, the number of adverse psychosocial work conditions that were identified and noticed in enterprises increased steadily, and steps for managing risk were implemented according to the recommendations of PRIMA-EF. These include the versatility of the intervention strategy, definition of duties and time frame and the monitoring of the process. Importantly, once interventions have been established, enterprises receive improvement notices to be recorded by the labour inspectors as incentives and rewards.

4.1.2.4 Nordic countries

Active labour market policies and remuneration and tax policies that aim to reduce income inequalities are crucial in improving the health of the working population. At the level of national welfare systems, job stability and the quality of work have been shown to be greater in universalistic welfare states, such as in the Nordic countries (6,26). Relevant social security arrangements in the Nordic countries include setting unemployment benefits above the poverty threshold. They also include some protection from severe market forces, an extended pension insurance system based on the duration and status of employment and relatively generous sickness pay schemes and rehabilitation measures and granting employees the opportunity to withdraw from work (for short or long periods) because of ill health. Workers in routine and manual jobs and employees with lower salaries tend to have a greater need for such benefits, given their higher workload and poorer general health status (6). Implementing these measures into welfare systems that are more strongly characterized by liberal principles (such as promoting private welfare provision, targeted assistance measures and limited social security) has considerable potential for reducing health inequalities. The specific areas of intervention are as follows: (a) attempting to reduce long-term unemployment, (b) providing incentives to increase entry and re-entry into the labour market, including special programmes for vulnerable groups and (c) investing in the work ability and health of older workers. Nevertheless, despite some promising results

In summary, Denmark's approach has promising potential to systematically improve the psychosocial working environment, since it emphasizes primary prevention at the organizational level, it applies scientific evidence in terms of shared monitoring tools and it provides a network of support and control via the systematic involvement of labour inspectors, adding this new obligation to their job task profile. Nevertheless, it is too early to evaluate the effectiveness of these developments in improving workers' health and reducing the social gradient of major diseases.

(287), no evidence so far indicates that health inequalities between socioeconomic groups are smaller in the Nordic countries than in other western European countries (288). Thus, the impact of national health policies on health inequalities requires further scientific analysis and additional policy efforts.

Many incentives to increase entry and re-entry into the labour market are primarily directed towards women, specifically by supporting childcare facilities and by providing part-time employment. In the Nordic countries, social policies encourage mothers to engage in paid work. This includes single mothers, who are disproportionately represented in lower socioeconomic groups. Although the health status of single mothers is generally poorer than that of married women, irrespective of the type of welfare system, single mothers in Nordic countries were shown to be less often materially deprived than single mothers in Britain (289). A further study found that employed women with children had better health, both in England and Finland (290).

The Nordic countries are among the leaders in developing and implementing programmes that aim to maintain a large proportion of older people in paid work. Extensive measures to retrain and re-skill and to promote health and work ability are implemented in these countries (291). Flexible retirement and enhanced part-time options and regulations to protect highly stressed occupational groups at older age are complementary measures that improve the

health and work ability of older employees in the Nordic countries. However, to our knowledge, no prospective evidence is yet available on the effects of such measures on reducing health inequalities among older workers.

The Nordic welfare regime may also provide stronger buffers against the adverse health effects of economic crises and substantial job instability. Preliminary evidence indicates that social inequalities in health have tended to remain stable in Nordic countries during periods of economic crisis, whereas they seem to widen in other European countries with both more liberal and conservative regimes (63,292,293). Indirect support for this view is given in a report on the adverse health effects produced by economic insecurity, in the context of trade and financial liberalization. The absence of social protection policies magnifies morbidity and mortality risks (26,294).

Finland is considered one of the leading countries worldwide in managing psychosocial risk at work. Supported by

the activities of the Finnish Institute of Occupational Health, by nationwide surveys and high-quality epidemiological research, a revised Occupational Safety and Health Act entered into force in 2003. Accordingly, employers are obliged to continually monitor the working environment and to demonstrate improvements where needed. Special emphasis is put on harassment and the threat of violence at work. A further innovation concerns preventing work-related stress with the help of occupational health care. Strengthening the role of occupational health care is also important in improving the work ability of older employees and return to work of chronically ill employees and employees with disabilities.

These developments in Finland emphasize that legal obligations and employee requests are important drivers for psychosocial risk management. In Finland, organizational development and continual learning are widely established activities in the public sector and in large companies, but less so in the private sector and in smaller businesses (277).

4.1.3 Links between macrosocial policies and the quality of work and employment

Given the large gaps in current knowledge about the extent of improvement of the quality of work and employment that is attributable to specific macrosocial policies, findings from a new field of comparative international research may be instructive. This field of research analyses the variation in the quality of work and employment, at the national level, according to the degree of implementation of innovative macrosocial policies. Here, we give a few examples of how indicators of innovative macrosocial policies at national level are associated with indicators of good quality of work. Again, the European comparative research programme of the Survey of Health, Ageing and Retirement in Europe is used as empirical basis. For methods, we chose specific macro indicators related to labour market policies within the European countries under study, in particular measures of active labour market policies. In general, six categories of active labour market policies are distinguished (295), of which

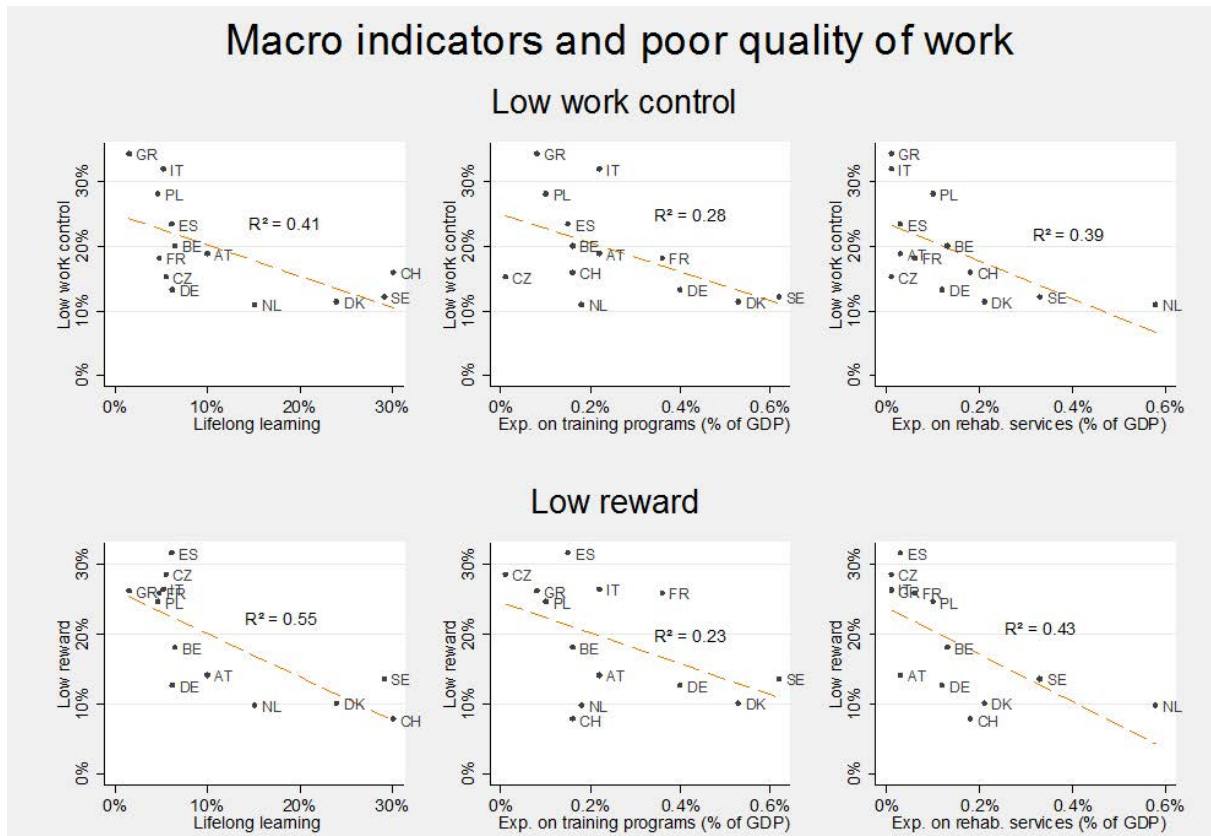
two are used in the context of the current analyses: (a) measures related to training programmes for the working population, and (b) measures related to rehabilitative services of a country. Training programmes refer to programmes aiming at increasing working skills, such as workplace training or further education. They improve the level of qualification and strengthen older people's position within the labour market. To represent this category, we use two indicators in our analyses, one indicator referring to the actual participation in such activities and one indicator referring to the proportion of a country's labour market expenditure invested in training programmes. Specifically, the first indicator is measured as the percentage of people 25–64 years old who stated that they received education or training in the last month. The extent of expenditure is measured as a percentage of GDP. The second category of active labour market policies concerns rehabilitative services in a country and,

more specifically, supported employment and rehabilitation services for people with limited working capacity. Such measures are thought to increase the rates of return to work of people with chronic illness and to reduce time intervals from treatment to returning to work. Our proposed indicator is the amount a country spends on such programmes,

expressed as a percentage of GDP. For each macro variable, we collected information available from 1985 to 2005 from the OECD database, and we computed a respective country mean score for each indicator.

For studying the associations between macro indicators and the quality of work,

Fig. 7. Percentage of European Social Survey participants saying “yes, a lot” and “yes, to some extent” when asked: “Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem?”



Note: based on weighted data.

Source: Siegrist & Wahrendorf (149).

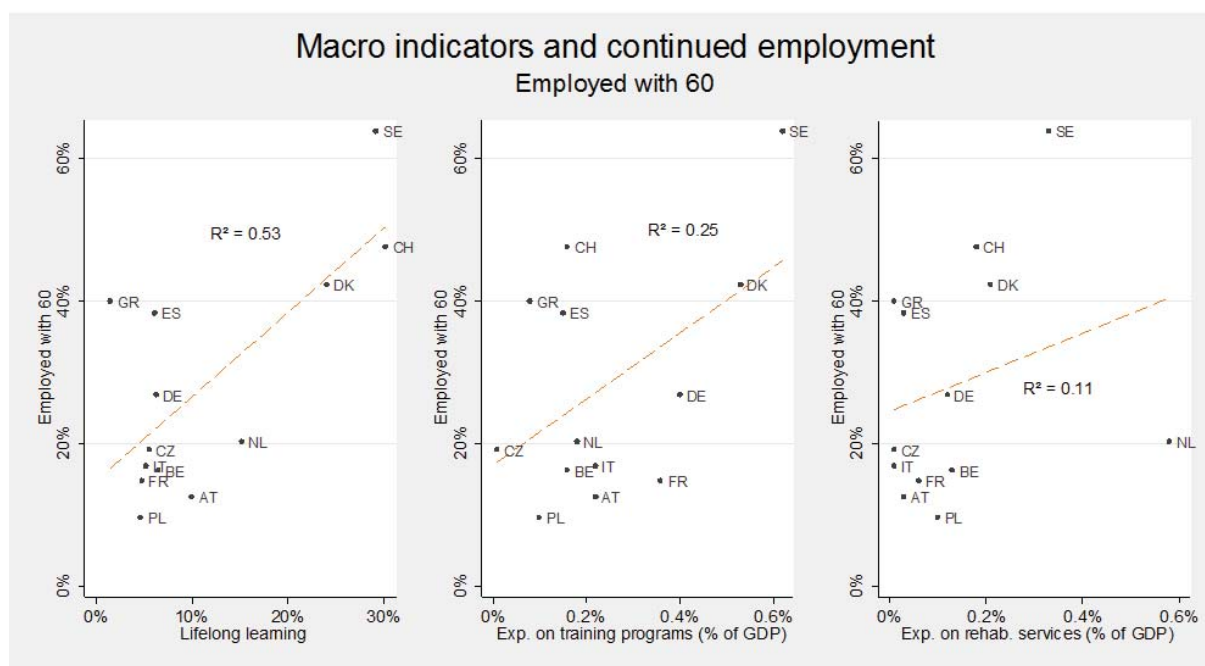
two main indicators of poor quality of work were selected. They both refer to an adverse psychosocial working environment (a) in terms of low control; and (b) in terms of low reward at work. Fig. 8 and 9 display the respective results. First, we observe a pronounced association between a country's activities related to lifelong learning and its aggregate measure of the quality of work (on the left side of Fig. 8). Higher participation rates in lifelong learning are associated with better mean quality of work (higher amount of control and reward at work). However, when this active labour market policies indicator

is compared with the second indicator, the proportion of expenditure in such activities as a proportion of GDP, the respective associations with quality of work are less pronounced (see the middle of Fig. 8). This finding may indicate that the first variable is better suited to capture a respective macro-level effect on the quality of work. Second, with regard to expenditure in rehabilitative services, associations with the quality of work are again observed in the expected direction: higher investment at the country level is associated with better mean quality of work (see the right side of Fig. 8).

As an indicator of quality of employment, we analysed the rate of older workers, those beyond age 60 years, who still work. A higher rate may represent more health-conducive arrangements of work and employment. As indicated in Fig. 9, the respective associations of the three macro indicators with the probability of staying at work beyond age 60 years show a relatively consistent pattern. Strong associations are found in rates of participation in lifelong learning,

where continued employment at older age is more prevalent among people working in countries with high rates of participation, such as Denmark, the Netherlands and Sweden. These findings should be interpreted keeping in mind the methodological fallacies of ecological correlations. Moreover, the relationships are not strictly linear, and therefore, some caution is needed in evaluating the R^2 .

Fig. 9. Macro indicators and employment at age 60 years in the Survey of Health, Ageing and Retirement in Europe (12 European countries)



Source: Siegrist & Wahrendorf (149).

Despite these methodological limitations, preliminary evidence is available on a moderating effect produced by labour and social policies on health and well-being. Using the prevalence of depressive symptoms among older employees in 12 European countries (63), we hypothesized that employees exposed to chronic stress at work, including downsizing and restructuring, who lived in a country with a high level of social protection in case of redundancy and with a generous pension system were less susceptible to adverse health effects than employees in a country whose welfare regime leaves the burden of coping with adversity at work to individual employees. This assumption was tested in the framework

of two European studies on ageing: the Survey of Health, Ageing and Retirement in Europe and the English Longitudinal Study on Ageing (43,296), comparing data from 12 European countries. The sample consisted of 6270 employed men and women aged 50–64 years. Work stress was measured by a short version of the questionnaire assessing the effort–reward imbalance model, and depressive symptoms were measured by the Center for Epidemiologic Studies Depression scale. The 12 European countries were classified according to four types of welfare regimes: liberal (United Kingdom), conservative (Austria, Belgium, France, Germany, Netherlands and Switzerland), Scandinavian (Denmark and Sweden) and

southern (Greece, Italy and Spain). It was suggested that the Scandinavian regime provides the relatively highest protection and the liberal regime the relatively lowest.

In a cross-sectional analysis, the multivariate odds ratios of high work stress on the probability of experiencing pronounced depressive symptoms were calculated. The reference category was employees with medium or low work stress. The effects were adjusted for relevant confounders. Although the pooled data document a two-fold elevated

risk of depressive symptoms among those who report a high level of work-related stress, the odds ratios vary according to the type of welfare regime, with relative highest effect size in the liberal country (2.64) and the relatively lowest effect size in the Scandinavian countries (1.69) (63). These findings suggest a contextual influence on the strength of associations of work stress, including job insecurity, on mental health, where weak social protection regulations magnify adversity.

4.2. Microstructural policies

4.2.1 Results from intervention research

4.2.1.1 Physical and chemical hazards and injuries at work

There are two primary challenges in occupational health. One is appropriately identifying, treating and rehabilitating workers affected by occupational diseases. For instance, even after banning asbestos production, exposure to existing products has continued, particularly among lower-skilled construction workers. Exposure to heavy noise provides another example of higher prevalence among lower-skilled workers, where legal requirements are not always followed or where available protective devices often are not used.

Employers have responsibility to comply with these legal requirements and to provide qualified personnel to monitor and control conditions of work. Successful implementation requires the laws to be sufficiently robust, the enforcement agencies to be adequately resourced and the legal framework to be sufficiently clear to enable prosecution to succeed (such as the limited successful use of recent corporate manslaughter legislation in England). As an essential prerequisite, unambiguous and comprehensive risk assessment has to be established (see section 4.3).

The other main challenge is preventing injuries and accidents at work. The legal and organizational measures undertaken by occupational cooperatives in Germany during the past century have been particularly successful. For instance, over a period of

40 years, from 1960 to 2000, the number of work-related accidents was reduced from 140 per 1000 employees to 40 per 1000 employees. Major measures included improved monitoring and documentation of accidents, systematic implementation of safety measures performed by a well trained new professional group (safety experts), such as instruction or technological innovation, and comprehensive legal regulations protecting vulnerable groups. Since several low-status occupations were at increased risk (such as construction workers, wood and sawmill workers, farmers and agricultural workers), they had the largest health gain.

More recently, a nationwide campaign against falls at work was launched, where public personalities from sport and films served as role models to reinforce appropriate behaviour. This approach had previously been shown to be effective among occupational groups with less education. Among occupations involving frequent physical mobility (such as using stairs frequently or involving heavy lifting or dragging), falls were reduced by 15% during the two-year campaign (297). Another trial relevant to injury prevention in the United States concerned increased autonomy at work. A study of this intervention – particularly relevant for manual workers – found that increased control over the pace of work protected against the risk of occupational injury (298). Importantly, organizational

commitment (mainly from managers) and self-managing work teams (where feasible) reinforced this effect (299).

A recent European-wide project on the impact of safety representatives on reducing occupational health hazards concluded that having trade union representation in the assessment and control process leads to better compliance with the rules, lower accident rates and fewer work-related health problems (300). Implementing regular rest breaks has also been found to reduce the risk of accidents. Tucker et al. (301) found that rest breaks counteracted the accumulation of accident risk noted over two hours of continuous, repetitive, and largely machine-paced work at a car assembly plant in the United Kingdom.

Workplace health promotion has been found to have some positive effect on reducing work-related ill health. A review of intervention studies conducted in the United States (302) found that activities proposed for breaks (such as physical activity and meditation) promoted health, whereas many current work break practices (such as smoking and drinking coffee) did not promote health. The evidence indicates that, by simultaneously reducing unhealthy types of behaviour and promoting healthy types, activity-guided breaks have the potential to improve workers' health. The evidence did not indicate any significant reductions in social inequalities in health, but

further investigation of a causal link may be warranted.

Hanley et al. (303) documented for the first time the workplace health and safety experiences of domestic workers, using a participatory action research-based intervention study in Quebec, Canada. Eighty per cent 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. Evidence shows 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, and domestic workers have been shown to have overall poorer mental and physical health than women in other occupations. The study revealed striking findings relating to workplace accidents, illnesses and abuse in an occupation widely viewed as "safe" and "clean". Action and interventions resulting from the study led to a report that generated interest from community groups, policy-makers and the media, sparked a policy campaign and ultimately brought about legislative change to ensure protection for domestic workers in case of accident or illness on the job.

4.2.1.2 Work organization and risks related to working time

Two recent reviews of interventions on reorganizing shift work (170) and on compressing the working week (304) reached the following conclusions.

First, most changes in the patterns of time organization of shift work had little effect on health, except for a change from slow to fast rotation, or from biological backward to forward rotation, where beneficial effects on sleep quality, fatigue and work-life balance were observed.

Second, self-scheduling of shifts (improving control at work) reduces fatigue and sickness absence. In an intervention study on bus drivers, this reduced the risk of accidents by 20%.

Third, compressed working weeks as an alternative work schedule (such as the Ottawa system) have been shown to improve work-life balance but had only a small effect on (self-reported) health. Although methodologically improved studies are needed, these results do not suggest that restructuring the work schedules of manual shift workers will achieve large reductions in social inequalities in health. However, they do indicate considerable room for improving working time organization in daytime work, as follows.

- Given the health-adverse effects of long working hours, overtime and excessive work hours need to be controlled more

systematically, particularly in jobs in which legislation is often not strictly applied.

- The implementation of rest breaks is desirable, particularly in jobs with a fast pace, work pressure, multiple interruptions and monotony. Rest breaks have been found to reduce the risk of injury (301,302).
- Individual working time control (such as with regard to flextime or time banking) has been shown to reduce sickness absence, specifically among employed women and to moderate the adverse effects of psychosocial stress at work on sickness absence (182).

An overview of organizational interventions for work–life balance (305) concluded that such interventions fall into three main groups: initiatives addressing working time and/or working hours, collaborative action research focused on improving workplace equity and performance levels and initiatives to embed work–life balance within organizational cultures. However, understanding the long-term effectiveness of organizational strategies to enhance work-life balance requires more rigorous research designs. Further, measures of improving the flexibility of working time arrangements require careful consideration given the ambivalent effects on health produced by the more recently established flexicurity programmes (306). These programmes aim at enhancing the flexibility of employment conditions, including temporary worklessness, changes from full-time to part-time employment and changes in working time arrangements, in combination with measures of offering employment security.

In a summary study, Semmer (272) concluded that all of the following elements are needed for workplace interventions to be successful: active individual participation, management support, thorough risk analysis, a participatory approach, a combination of person-focused and organizationally focused interventions and the involvement of well trained specialists from the health and the work sectors. Lack of sustained management support is one of the most cited obstacles to successful intervention at the organizational level.

Nielsen (307) examined key European methods of workplace interventions to improving employee health and well-being by changing how work is designed, organized and managed. Methods included the risk management approach and the Management Standards in the United Kingdom, the German health circles approach, Work Positive from Ireland and Prevenlab from Spain, all of which share several core elements. The authors concluded that the national and EU initiatives may increase organizations' motivation and ability to conduct organization-level occupational health interventions, and that this requires formal procedures. Nielsen (22) further found that concurrent changes such as mergers and downsizing may hinder the effectiveness of an intervention and recommended that these be integrated into intervention designs since they are part of today's organizations. The authors also argued that employees should join forces and use their day-to-day autonomy to take responsibility for ensuring a healthy organization.

As part of a comprehensive review process aimed at better understanding and addressing barriers to organization-level interventions, LaMontagne et al. (308) examined the workplace interventions conducted between 1990 and 2005 in which organizations tried to address job stress proactively. The review concluded that individually focused, low-system approaches (such as coping and developing time management skills) were effective at the individual level and positively affected individual-level outcomes such as health and health behaviour, but tended not to have positive effects at the organizational level (such as reducing exposures, sickness absence). High-system approaches, which combine individual- and organization-directed intervention (such as addressing working conditions and the organization of work), however, resulted in both individual- and organization-level benefits. Between 1990 and 2005, intervention studies using high- and moderate- (organization-directed only) system approaches increased, although low-system approaches remained the most common, despite their lack of impact at the organizational level. Four key micro-level challenges to organization-level interventions were identified: gaining management support,

articulating the need for comprehensive worker- and work-directed interventions, establishing participatory processes and early detection of opportunities and threats. Macro-level challenges to organization-level intervention were also identified, including the broader labour market, the local or international economy, national cultures,

political conditions, and regulatory and other policy influences. The authors concluded that, because organizations operate in a broader context that continually shapes their practice, they may need higher-level intervention to facilitate a stronger organizational focus in psychosocial risk management in particular.

4.2.1.3 Psychosocial working environment

The widespread prevalence of job stress among working people translates to large preventable burden of common chronic illness and disease. Job stress-related workers' compensation claims statistics substantially underestimate the burden of job stress-attributable common mental disorders, particularly among lower-status workers.

The available evidence suggests that priority groups for intervention include younger workers, working women and workers in lower-skilled occupations and precarious employment arrangements (308).

Job stress can be prevented and controlled at the organizational level by applying a system or comprehensive approach. Despite the extensive evidence in support of system approaches to job stress intervention, prevalent practice internationally remains disproportionately focused on individual-level intervention, with inadequate attention on reducing job stressors (308).

Several systematic reviews have summarized current evidence on the health effects of improving the psychosocial environment at work (272,308–317). Most intervention studies have addressed behavioural changes, especially stress management programmes, and fewer have tested the effects of changes in the working environment. Only a minority of these studies are explicitly based on the theoretical models mentioned above, and many are not methodologically rigorous. For example, many studies refer to implementing organization-level workplace interventions but, overall, reporting is poor, and only a minority of studies describe how implementation may have influenced outcomes (317,318).

Despite the methodological limitations, several conclusions can be drawn from these reviews.

First, in relation to the demand–control–support model, relatively consistent results have been obtained on the positive effects on mental health and, where available, sickness absence from interventions that increased participants' job control and degree of autonomy at work (319). With a population of civil servants in the United Kingdom, Bond & Bunce (319) found improved stress-related outcomes by increasing job control through work reorganization, using a participatory action research intervention. No significant changes in job satisfaction were found. Egan et al. (313) also found that employee participation and control increased as a result of interventions focused on workplace reorganization. Some health benefits were found (with particular beneficial effects on mental health, including reduction in anxiety and depression). It is not known whether the positive effects lasted over time, and the interventions did not protect employees from generally poor working conditions. Worsened employee health was found in two studies in which participatory interventions occurred alongside job layoffs. The little evidence suggests that participatory interventions may benefit low-skilled workers and employees belonging to ethnic minorities. The authors concluded that such interventions can potentially reduce workplace health inequalities. Less evidence exists for the positive effects of reducing demands or augmenting social support (313).

Second, interventions that worked well have been characterized by a participatory approach involving employee representatives and management personnel, such as problem-solving committees or health circles. In this context, some studies applied participatory action research, a strategy in which the roles of investigators and members of the organization under study

were not absolutely separated (20,306,320). Aust & Ducki's (20) review of studies of the effects of health circle worksite interventions in Germany concluded that stress was reduced because of better work organization, physical strain was reduced by supplying better work equipment, technical or ergonomic improvements, and communication within the company and social support from supervisors and colleagues were positively affected. Although reliable scientific proof of health circles' successes is still needed, the indications are in the direction of improvements in working conditions, subjective and objective health measurements, as well as work satisfaction and work climate.

Third, increasing task variety as part of the job and strengthening teamwork resulted in inconsistent and at best modest improvements in health. Bambra et al. (310) found that task-restructuring interventions that increased demand or decreased control adversely affect the health of employees. Increases in workplace support did not improve the outcomes. However, one study systematically linked improved quality of work to improved mental health in a longitudinal study (321).

Introducing more autonomous production groups in factory-based mass production did not show the desired effects on health (310). Given the inconsistent findings, the authors suggest that policy interventions that aim to increase job control and autonomy (such as the EU directive on participation at work) should remain a priority for public health policy.

Fourth, in relation to the effort–reward imbalance model, work-related burnout and psychobiological stress reactions were significantly reduced by reward-enhancing measures based on organizational and personnel development, including leadership training (321–325).

Fifth, evidence is emerging indicating that the combined effects of making changes to the setting (working environment–focused interventions together with employee-focused mechanisms for coping with adverse work) are stronger and more sustainable than their separate effects (272,312,326). Thus, tailoring organizational interventions to

specific subgroups or contexts provides an effective approach to achieving intervention goals.

Sixth, several studies indicate that combining working environment change with healthy lifestyle interventions among employees increases the probability of them adopting health-promoting behaviour. This is the case among white-collar employees and skilled blue-collar workers (327–329). The latter results are relevant given the well documented steep social gradients in health-adverse behaviour and the potential for preventive gain by reducing them. The systematic review by Graveling et al. (314) differently but similarly framed this as applying a more holistic approach, by including stress reduction interventions in a wider health promotion framework. Their findings suggested that this approach would also address health inequalities through other elements of the intervention, such as smoking cessation and improved diet. Interventions in Australia aimed at reducing depression and anxiety symptoms through health promotion techniques indicate that using a broad range of health promotion interventions can be effective, although the effect is small (315).

Seventh, since health-promoting psychosocial working environments have been shown to improve return to work among chronically ill people and particularly people with mental health problems, preventive and rehabilitative efforts need to be strengthened (55,330). In addition, there is a strong business case in term of sickness absence reduction and productivity gain for introducing such measures, in particular the individual placement and support models (254,327,331).

LaMontagne et al. (317) and LaMontagne & Keegel (316) found that job-stress interventions that focus on both the organization and the individual or focus only on the organization (addressing working conditions) have favourable effects at both individual and organizational levels, compared with interventions that focus only on the individual (such as coping and developing time management skills). This finding is consistent with the hierarchy-of-controls principle that, the further upstream the intervention, the more effective it will be

at preventing both exposure and disease. The findings provide strong supporting evidence for growing efforts internationally to address the upstream determinants of job stress (job stressors or psychosocial working conditions) as well as the downstream health and other consequences.

The literature demonstrates convincingly that individually focused interventions tend to result in little positive sustained outcome change other than at the level of the individual. Nevertheless, these are still the most frequently used types of interventions. The individually focused interventions that have been successful were mostly implemented in combination with organizationally focused interventions (317). Richardson & Rothstein's (316) meta-analysis to determine the effectiveness of stress management interventions in occupational settings found that relaxation techniques (individually focused) were most frequently used, whereas organizational interventions continued to be scarce. The reported effects were based mainly on mental outcome variables as opposed to physiological or organizational measures.

Although it appears evident that job stress can be prevented and controlled effectively using a system or comprehensive approach that integrates primary, secondary and tertiary intervention, very few intervention studies have been identified that have integrated tertiary-level intervention with primary and/or secondary prevention intervention (317). This finding suggests that this is also the case in prevalent practice and indicates a disconnection between tertiary-

level and other intervention research and practice at the organizational level – an unrealized preventive potential.

Eighth, since strong efforts are needed to integrate unemployed people into work, promising trials based on cognitive behavioural therapy were recently conducted demonstrating improved mental health and increased re-employment rates in intervention versus control groups. Of particular interest is a study in the United Kingdom that combined job skills training with improving self-efficacy, self-esteem, locus of control and automatic thoughts (332). The programme was effective in improving mental health and job-seeking efficacy after five weeks. Although the subgroup recruited for this programme had a high level of mental distress, a healthier population could also benefit from the programme.

In summary, applying a system approach to job-stress interventions applies the precautionary principle in recognizing the need for further intervention research in this area while simultaneously arguing that there is adequate evidence to justify concerted public health action to reduce job stress. Overall, the evidence indicates that the job stress-related disease burden is substantial and inequitably distributed and could be addressed by applying a system approach to job stressors and other psychosocial working conditions. An optimal public health response to job stress would encompass participation by the full range of stakeholders. It is suggested that this approach would at least begin to redress the social gradient (308).

4.3. The role of monitoring systems

4.3.1 Routine monitoring: limitations and prospects

Ideally, routine monitoring systems for work-related health would be in place locally, nationally and internationally, and these systems would be complemented by additional scientifically driven representative data. At the level of the EU, this aim is still far from being met, since there are large differences in the stage of national development of monitoring systems. Some of these differences are due to legal requirements of data protection, to different

responsibilities assigned to organizations within the health and work sectors and to differential level of political awareness and commitment. Moreover, it is often difficult to link occupation-related data with health-related data, such as based on morbidity or mortality registries or based on data from sickness funds, pension insurance institutions or occupational health and safety offices. International, national and local surveys monitoring occupational conditions, with or

without explicit links to health information, are a promising approach, if valid and conceptually sound measures are used. Here, a short summary is given on current monitoring activities at the national and EU levels, and some future directions of the respective actions are mentioned.

At the European level, numerous initiatives monitor working and employment conditions relevant to health inequalities. Most prominent among these are the European Working Conditions Surveys and additional reports from the European Foundation for the Improvement of Living and Working Conditions and the European Agency for Safety and Health at Work, including the European Risk Observatory Reports. However, these and related reports (such as decentralized Eurostat surveys, such as the European Union Labour Force Survey or European Union Statistics on Income and Living Conditions, or harmonized and centralized surveys, such as the European Social Survey, although demonstrating links between social inequalities and work, provide limited evidence on links between work and health (31,150).

In terms of policy evaluation, a recent European Survey of Enterprises on New and Emerging Risks covering some 28 000 enterprises in 31 countries is highly instructive (56). It indicates that, even though work-related stress was reported to be among the key occupational health and safety concerns for European enterprises, only about half the participating organizations 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 an adverse psychosocial working environment. The sensitivity of the topic and a lack of awareness, resources and training were mentioned most often as obstacles to dealing with this latter issue.

Among scientific studies linking information on working conditions with information on health, the Survey of Health, Ageing and Retirement in Europe deserves special attention. As mentioned earlier, this is a

longitudinal panel study of representative samples of men and women aged 50 years and older in a majority of European countries. Detailed occupational trajectories and current working and employment conditions are monitored in combination with a set of subjective and objective health indicators. A variety of results can be used from this large data set, which complements available routine information. To give just one small example relevant to social inequalities of work-related health, the results of multivariate statistical analysis demonstrates that low socioeconomic position, as measured by educational attainment, significantly increased the risk of exhibiting clinically relevant depressive symptoms during follow-up in the European countries under study. Nevertheless, after introducing the two measures of an adverse psychosocial working environment, effort–reward imbalance and low control at work, this significant effect disappeared while both work-related indicators remained clearly associated with this health outcome (333). This finding underlines the relevance of interventions that aim at improving the psychosocial working environment for strategies of reducing social inequalities in working people's health.

There is rich potential in exploring the extent and the determinants of work-related health inequalities across Europe, linking them to regional and institutional, policy-related variation, setting benchmarks for future development and strengthening the evidence base of targeted interventions. A most recent initiative undertaken by the EU Committee of Senior Labour Inspectors aiming at developing an integrated set of measures of psychosocial stress at work holds particular promise in this regard. These developments are supported by initiatives taken by distinct countries. Several such initiatives can act as examples of good practice. They have usually been developed in the framework of broader approaches towards improving working and employment conditions at the national level, as discussed in section 4.1.2.

In England, a new National Statistics Socio-economic Classification was introduced in

2001 to monitor social inequalities in current work and employment conditions in a reliable way. Its five key dimensions are the structure of pay, the quality and period of work contract, the promotion prospects and the degree of flexibility in working time. National Statistics Socio-economic Classification data are linked with administrative data on health, including mortality, thus offering rich information on work-related health inequalities and their development over time (334). Additional efforts were undertaken by the Health and Safety Executive, which implemented a standardized measure of psychosocial stress at work as a web-based tool, providing options of comparing work stress levels between branches or companies and enabling them to monitor progress following worksite health promotion activities (see section 4.1.2). More recent developments concern the availability of a report published by the East Midland Public Health Observatory providing guidance to employers on the systematic planning of workplace health needs assessment, including recommendations regarding approaches and tools and information on how to analyse survey results (335,336). Moreover, in England, one of the world's leading research projects on the role of work in explaining health inequalities, the Whitehall II study of British civil servants, has been and still is being conducted (see section 3.2.3).

A different approach was developed in Denmark, where substantial policy developments took place, as explained in section 4.1.2. Meanwhile, elaborated

guidance tools were developed, comprising 24 sector-specific standardized assessment devices for monitoring health-adverse working conditions (286,307). Although taking into account sector-specific stressors, the core categories of these guidance tools cover work-related violence, traumatic experiences, emotional and quantitative demands, working alone and night and shift work. The risk assessment is combined with an assessment of preventive measures available within enterprises, and the results of this comprehensive monitoring process provide a basis for targeted intervention measures, as described above. Thus, Denmark is one of the few countries that has developed a nationwide updated monitoring system of psychosocial risk at work with close links to surveillance and intervention.

More recently, France has become a highly committed country with regard to occupational health following a directive from the Ministry of Labour to develop a unified measurement tool for assessing health-adverse working conditions. To this aim, an expert committee was established in 2008, reviewing the international state of the art and proposing a core set of indicators of an adverse psychosocial working environment to be measured at the level of national statistics (337). Currently, several large-scale surveys are underway, exploring social inequalities in working conditions.

Several other EU countries are in the process of developing and implementing monitoring systems, but it is premature to assess their effects on improved working conditions or on workers' health.

4.3.2 New approaches

Some recent developments of linking monitoring systems with policies towards improving workers' health are noteworthy and briefly discussed here, in addition to the PRIMA-EF programme discussed above (section 4.1.1). Examples of such developments to be briefly described here are (1) the Work Security Index proposed by the

ILO, (2) the application of participatory action research to policies that aim at improving work and health (as exemplified by a case study on civil aviation workers), (3) the French project CONSTANCES and (4) the initiative of evaluating a legislation-based nationwide campaign of worksite health promotion in Germany.

4.3.2.1 Psychosocial working environment

The magnitude and nature of the widespread changes that have taken place in the world of work over 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. 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 (338) (Annex 3).

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 universal rights-based approach. It includes limits on working time, paid maternity leave, providing paid vacation, providing paid sick leave, protecting workers with disabilities from discrimination and restricting night work as well as workplace health and safety committees or departments and the availability and provision of workers' compensation (Annex 3).

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 Work Security Index 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.

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).

The Work Security Index was constructed from information collected on 95 countries in all global regions. 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 the ILO.

The Index 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.

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. Fig. 10 shows the performance in protecting workers' health and well-being for those

countries in the WHO European Region included in the Work Security Index.

The Work Security Index 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 Work Security Index to extrapolate the level of worker protection that they are achieving in the absence of their own data. Local or

national governments can use the Work Security Index to evaluate their performance in protecting workers' health, identify areas of strength and weakness, and compare themselves with other local or national governments. The Work Security Index can help policy-makers to identify how best to target efforts for improving work security by identifying where allocations might make the greatest impact. As can be seen in Fig. 10, substantial efforts are needed to move "much-to-be-done" and "conventional" countries and even "pragmatist" countries to the level of "pacesetter" countries.

Fig. 10. Work Security Index results for countries in the WHO European Region

		High score on outcome			
		High score on input and process		Low score on input and process	
		Pacesetter countries		Pragmatist countries	
Eastern part of the Region		Slovenia		Czech Republic Estonia Hungary	Latvia Lithuania Poland Slovakia
Western part of the Region		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		Low score on input and process	
Subregion		Conventional countries		Much-to-be-done countries	
Eastern part of the Region		Azerbaijan Belarus Croatia Kyrgyzstan	Russian Federation Tajikistan Ukraine	Albania Armenia Bulgaria Georgia Kazakhstan	Republic of Moldova Romania Turkmenistan Uzbekistan
Western part of the Region					

Source: chart adapted for this report; original charts and country groupings from Annycke et al. (338).

4.3.2.2 Participatory action research: a case study of civil aviation workers

Participatory action research is a method appropriate for the epidemiological study of health issues in worker populations that systematically takes into account the workers' experiences. The term action indicates that the research is meant to contribute to change efforts through an interactive research, learning and action process. In this process, the people who are experiencing a work-related health problem participate with researchers in deciding the focus of knowledge generation, in collecting and analysing information and in taking action to improve the conditions. Clearly, participatory action research differs from conventional epidemiological research by rejecting the separation of theory from practice, by carrying out research with people rather than on them and by using a bottom-up approach (Annex 4). Participatory action research has been used extensively in organizational development in industry and management but has been applied less frequently to occupational health and safety, with some noticeable exceptions (Annex 4).

One such exception concerns a study on the role of stress and fatigue among civil aviation workers that was initiated by the International Transport Workers' Federation and based on participatory action research (339). The reason for conducting this study was a growing workload of aviation workers, combined with a decline in their working conditions, despite a global growth of air passenger traffic, air freight volume and increased revenues. Therefore, the international union was committed to take action with scientific evidence in hand.

Together with an independent research team, the International Transport Workers' Federation undertook a global study through its affiliated trade unions in 116 countries to assess a potential increase of stress and fatigue between the years 2000 and 2007. Using participatory action research methods, changes in working conditions and health between 2000 and 2007 were examined among cabin crew, ground staff workers, and air traffic service workers. The empirical results were based on survey-based

assessments obtained from union affiliates in all regions rather than from the 800 000 individual workers that the International Transport Workers' Federation represents. Thus, one representative from each affiliated union was asked to judge and assess the average working and health conditions of these occupational groups, based on extensive experience and consultation. 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.

Some of the striking findings of the study are as follows.

- Overtime work among cabin crew was strongly associated with mental fatigue.
- Significant associations were observed between constant pressure due to heavy workloads and burnout.
- Half of all representatives reported increases in intimidation by management.
- Regions with expanding civil aviation markets, such as Asia, experienced an increase in precarious forms of work and a decrease in stable employment.
- Regular shift work patterns decreased among cabin crew and ground staff workers, in all regions.
- Where regulation is stronger (such as in Europe), trade unions can have stronger influence in shift assignment and rostering.
- Salaries, promotion prospects and job security were lower in countries with no perceived option of an established collective bargaining process.
- Health and safety conditions got worse for all three groups, in all regions.
- Effort–reward imbalance was found among all three groups, in all regions.

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 the potential of modifying health-adverse working conditions. So far, to our knowledge, International Transport Workers' Federation and its global affiliates have not yet firmly developed a strategy addressing the common concern of stress and fatigue in a way that

focuses effectively on the specific needs of each of the three groups of civil aviation workers. The study findings should be used to emphasize the need for close and active trade union collaboration, strong organizing efforts, solidarity and campaigning at the local, national, international and regulatory levels.

4.3.2.3 *CONSTANCES project in France*

The CONSTANCES project has developed an innovative approach bridging research with a major attempt towards reducing work-related health inequalities (340). This project is planned as an epidemiological population-based open laboratory encompassing a population of about 200 000 insured people who will be offered a comprehensive health examination and consultation irrespective of whether they are employed in the formal or informal labour market or unemployed. The project has thus reached and invited to participate several population groups at

elevated risk of having an elevated work-related burden of disease that were excluded from regular visits at occupational health centres or who may have experienced difficulties in receiving appropriate care from other health care organizations. This new initiative based on collaboration between social security agencies and a research consortium on occupational epidemiology may help in reconciling scientific evidence on the afflictions of work and employment on workers' health, with targeted delivery of services to those with highest need.

4.3.2.4 *Evaluation report on legislation-based workplace health promotion in Germany*

Based on legislation (SGB V, § 20a), sickness funds in Germany have the right to spend a certain proportion of their money for workplace health promotion activities, in collaboration with the stakeholders of enterprises. According to the law, priority has to be put on activities that contribute to reducing social inequalities in health. Although enterprises are not forced to join these efforts, more than 5300 enterprises were included in such activities by the end of 2009, and sickness funds spent about €40 million, reaching some 2 million insured workers. There is no uniform intervention approach, and health behaviour-related programmes still prevail. However, a recent evaluation report (341) documents these activities and reaches the following conclusions.

- Almost one third of all programmes have been realized in industry, focusing on workers exposed to heavy physical and psychosocial workload.

- Many medium-sized and small enterprises are included that had few previous opportunities to implement such programmes.
- Older workers and working women are still underrepresented in these programmes despite efforts to reach them.
- Intervention measures include reducing physical work load (ergonomic interventions); stress management; health-promoting behaviour (campaigns); leadership training; and measures for organizational and personnel development.
- Most programmes are based on baseline assessment, using either administrative data from sickness funds or primary data from employee surveys; moreover, participation rates, frequency and duration of programmes are monitored.
- However, no validated data on the health effects among participants are available so far.

4.4 Summary

This chapter presented the second part of a review of evidence, dealing with programmes and policies to reduce health inequalities at work. The nature of this review is narrative rather than systematic or meta-analytic because the variety of study designs, measures and contexts precludes comparative assessment. The review was divided into three parts: macrostructural programmes and policies, the feasibility and effects of microsocial interventions and the role of monitoring systems in promoting healthy work, both at the national and the local (or company) level.

Macrostructural programmes and policies address the national or international level. Internationally, WHO, the ILO and the European Commission have been proactive in setting standards for improving healthy working conditions, either by legal regulations or voluntary agreements, in developing guidance, training and monitoring tools for implementation and in supporting the provision of services. These policies have been widely established with remarkable success in injury prevention and occupational safety measures and in preventing and monitoring occupational diseases, although improvements are still needed in a majority of countries. In the newly emerging field of health-adverse psychosocial working environments, comparable policies are still largely missing. Importantly, one such recent initiative, PRIMA-EF, aims at promoting a unified approach to risk management across Europe by applying a systematic, evidence-informed problem-solving strategy. This strategy is briefly described in this chapter (and presented in more detail in Annex 2).

Several national policies are tackling health-adverse modern working conditions through innovative approaches. Prominent examples are the Management Standard approach in the United Kingdom, the activities evolving from a renewed Working Conditions Act in the Netherlands, Denmark's initiative of promoting healthy work through shared monitoring tools and networks of support involving labour inspectors and pioneering

occupational health initiatives in Finland and other Nordic countries.

So far, the effects of macrosocial policies on the quality of work and workers' health have rarely been evaluated systematically – a task that is challenging methodologically as well. However, as a step towards this aim, recent international comparative research on welfare regimes and distinct national labour and social policies has provided some preliminary evidence of beneficial effects. For instance, investment in active labour market policies has been shown to result in higher rates of employment at age 60 years and beyond.

More systematic research has been conducted at the microstructural level. Current evidence derived from intervention studies at the company level was reviewed in the second part of the chapter. Intervention studies address the physical and chemical hazards at work as well as injury prevention at work; they include managing risks related to working time (such as shift work and overtime work) and the large area of adverse psychosocial working environments. Despite a body of promising results on the benefits resulting from these interventions, substantial gaps of knowledge still remain to be filled. Most interventions so far have targeted the individual behavioural level rather than changing working environments. Moreover, little is known about the long-term effects on health and well-being of these interventions, their potential for reducing social inequalities in health and the conditions for implementing successful and sustainable changes at work.

The third part of the chapter dealt with opportunities for and restrictions in monitoring developments in occupational health, given the critical role of reliable data in raising awareness among stakeholders, in mobilizing and directing preventive activities and in assessing the results of such activities. Several international, national and local initiatives started to improve the availability, quality and comparability of data, and some of these initiatives have been briefly described here. Monitoring occupational

health conditions is not restricted to administrative procedures of data collection and data analysis. Rather, working people can be actively involved in attempts to identify unmet needs and neglected occupational risks. This is a way of advocating their rights to experience a safe, healthy and fair working environment. The Work Security Index developed by the ILO and a recently accomplished international project based on participatory action research are examples of these relevant extensions of monitoring procedures, and they are briefly described in the chapter and again, in more detail, in Annex 3.

Despite obvious gaps in knowledge and difficulties in advancing scientific evidence on health improvements resulting from macrostructural and microstructural interventions at work, a solid body of research findings and insights has been accumulated in recent years. This body of knowledge justifies the elaboration of a set of policy recommendations, with a special focus on their implications for reducing health inequalities within and between the countries in the WHO European Region (342).



5. Recommendations

5.1. General perspective

Based on the evidence presented in this report, a key area for policy-makers to address will be adopting protective policies designed for implementation at the national level in all countries in the WHO European Region. Despite limitations, the body of evidence presented in this report is sufficiently robust to support the notion that interventions designed only for individual workplaces or individual behaviour – despite their benefits – will not reduce the social gradient significantly. Reducing the social gradient of health effectively requires national-level policies that target the country's overall social protection system. Steps towards more equalization taken by some of the Region's most active countries already show some positive impact, and more promising developments are expected during the next few years. Clearly, the country context is of utmost importance. Interventions that work in one country cannot necessarily simply be imported and applied directly in all other countries. For this reason, national-level regulations make sense, as these would be developed taking into account the country's individual social and economic factors.

National-level policies will create a benchmark for all economic sectors of the society to aim to achieve. National-level policies should serve as a mandate to individual workplaces to implement interventions where problems exist, no longer leaving intervention up to the decisions of individual employers. Again, this is a way to set a standard in each country and shift part of the responsibility from employers to the government. Mechanisms are needed to ensure the application and transparency of regulations and standards.

Although the national level of policies remains crucial, the respective activities should nevertheless be reinforced and coordinated by trans- or supranational agencies or organizations, delivering agreements, frameworks and means for further

development. In this context, the WHO Regional Office for Europe plays a decisive role. It is hoped that supportive actions contribute to national efforts to reduce health inequalities.

What would be likely outcomes by 2020? With strong national regulations and standards in place, most workplaces, including those where the most vulnerable members of society work, would begin to gain an awareness of their workplace climate. A nationwide social culture of striving for developing healthy workplaces could be nurtured, if appropriate occupational safety and health services are available. Individual workplaces would be much more likely to take appropriate actions if they were mandated by a national policy.

This discussion has contextualized national laws and voluntary agreements reached by social partners in relation to individual workplaces as a step toward reducing the social gradient. By definition, that would refer to employed workers. As demonstrated in this report, however, much of the social gradient of health is determined by unemployment, lack of work, job instability, job insecurity and existing ill health making return to work difficult or impossible. The social gradient of health inextricably linked to unemployment, disability, job insecurity and lack of work cannot be addressed at the level of the workplace. The causal factors are part of the complex social and economic fabric unique to each country. National-level policies, supported as mentioned by supranational action, have the scope, power and oversight capacity to be effective in catalysing a significant reduction in the social gradient of health related to these wider socioeconomic factors. In countries where unemployed people remain at least visible and socially integrated, this is largely due to protective national laws, which do not exist in all countries in the Region. One such measure alone will not suffice to reduce the social

gradient substantially. National policies are needed to ensure return-to-work programmes, the availability of appropriate rehabilitation services and sufficient benefits for workers with disabilities. Moreover, active labour market policies are expected to contribute to creating jobs, particularly for young age groups, low-skilled workers and migrants and to reinforce opportunities for retaining older

workers in gainful employment. Such policies do not yet exist sufficiently in all countries across the Region. Interventions designed for the workplace combined with those for individuals should continue, taking the evidence reviewed in this report into account. International and national regulations and standards are important in guiding these developments.

5.2. Specific recommendations

Despite existing gaps in knowledge, the evidence summarized in this report provides solid information on the health effects of employment and working conditions and their social distribution. This information can guide effective action to reduce social inequalities in health through specific policy recommendations. This final section presents major recommendations organized according to two criteria. First, given substantial differences in the stage of economic, social and political development between different groups of countries in the Region, we distinguish recommendations directed to low- and middle-income countries from recommendations directed to high-income countries. This distinction does not preclude the transfer of some of the recommendations

from one part to the other part but rather indicates different priorities of action. Second, we distinguish recommendations at three levels of responsibility: the supranational, national and local levels. These three levels in part involve different decision-making bodies and stakeholders. Although national governments play a crucial role in implementing the recommendations, international agencies and organizations on the one hand and employer associations, specific professional groups, trade unions and a variety of nongovernmental organizations on the other hand are important actors in a larger socio-political process that is required to produce significant and sustainable benefits of health-promoting work at the level of total populations.

5.2.1 Low- and middle-income countries

5.2.1.1 Supranational level

Set priorities for measures of economic growth, in accordance with an environmental and sustainability strategy, to reduce poverty, lack of education and high unemployment by investing in training, improved infrastructure and technology and by extending access to employment and good quality of work throughout major sectors of the workforce.

This recommendation addresses:

- coordinating international efforts to reduce the impact of neoliberal policies on trade, labour market standards and wage policies between and within countries;
- enforcing the regulatory influence of international organizations and national governments in dealing with, or preventing,

marked-based financial and economic crises affecting these countries;

- securing national budget and tax policies that enable the sustainable development of basic health and social protection programmes within these countries; and
- making efforts towards reconciling economic growth with environmental protection and with policies of decent work within and between these countries.

Intensify and extend the transfer of knowledge and skills in the area of work-related health and safety from European and other international organizations, institutions and networks to national contexts within low- and middle-income countries.

This recommendation addresses:

- implementing training programmes for occupational health and safety professional groups;
- improving and standardizing monitoring tools and systems related to registration and risk management of occupational diseases, accidents and other health hazards at work;
- implementing regulations (such as ILO Conventions 155 and 156 and EU Framework Directive 391/89/EEC) and of procedures of voluntary agreement between social partners;
- further developing subregional occupational health and safety networks; and
- disseminating new scientific evidence guiding intervention activities and providing

best practice models of healthy work at different levels.

In addition to main partners (especially the WHO Regional Office for Europe and its networks, the ILO and EU agencies especially the European Agency for Safety and Health at Work), professional associations (especially the International Commission on Occupational Health), employer and union associations (such as European Association of Craft, Small and Medium-sized Enterprises, European Centre of Employers and Enterprises providing Public Services, BUSINESSEUROPE and European Trade Union Confederation) and other NGOs are expected to be involved in the respective activities.

5.2.1.2 National level

Reduce the burden of occupational injuries, diseases and other health risks by enforcing national regulations, by strengthening preventive efforts among vulnerable groups (especially migrant workers) and by developing appropriate human and financial resources for occupational safety and health services.

This recommendation addresses:

- investment in human capital and additional active labour market policies to increase employability and job stability among vulnerable groups (especially unemployed young people, low-skilled workers, migrant workers and agricultural workers) and among working women (full-time jobs, family-friendly policies and preventing violence and harassment);
- improving intersectoral collaboration

between health and labour ministries on work-related health policies;

- making efforts to shift occupational safety and health from secondary and tertiary prevention to primary prevention by improving the quality of work and employment, specifically among high-risk occupational groups;
- providing an adequately trained, equipped and financed occupational safety and health workforce with sufficient coverage of needs and with a clear mandate; and
- more strongly integrating occupational health services with other sectors of health care, thus strengthening the early intervention and rehabilitation of chronically ill people and people with disabilities.

5.2.1.3 Local level

Promote efforts to secure and extend healthy work and employment conditions at the subnational level of sectors, occupational groups, companies and single enterprises and of collaborative links with community health promotion programmes.

This recommendation addresses:

- enforcing the implementation of national law into subnational or local contexts, with special focus on preventing corruption and extending the application of sanctions for

violations among the responsible groups;

- making efforts to reach underserved occupational groups (especially atypical employment, home work, transport workers and precarious self-employed groups) and employed people working under substandard conditions or being paid for staying in dangerous, health-damaging jobs;
- strengthening the influence of trade unions and other representatives of the

- workforce in setting up regulations and voluntary agreements, in controlling their implementation and maintenance and in developing health-promoting activities within enterprises and companies; and
- developing a climate and social movement

of sustainable health at work by linking company-level preventive activities with community health promotion programmes and by raising awareness of benefits of healthy work among decision-makers and the wider public.

5.2.2. High income-countries

5.2.2.1 Supranational level

Maintain a high level of employment, in accordance with the principles of a sustainable economy, without compromising standards of decent work and policies of basic social protection.

This recommendation addresses:

- coordinating international efforts to reduce the impact of neoliberal policies on trade, labour market standards and wage policies between and within countries;
- enforcing the regulatory influence of international organizations and national governments in dealing with, or preventing, market-based financial and economic crises;
- securing national budget and tax policies that allow the maintenance and further development of active labour market and social policies; and
- making efforts to reconcile economic growth with environmental protection and with appropriate measures for empowering workers.

Develop the standardization of monitoring and risk management tools across high-income countries and support the implementation of best practice approaches within single countries.

Promote opportunities for safe, healthy and secure work across all sectors of employment by giving priority to high-risk occupational groups and people who are excluded from but able to enter or re-enter the labour market, thus reducing avoidable social inequalities in work-related health.

This recommendation addresses:

- coordinating national monitoring and risk management systems with the aim of implementing comparable core sets, taking into account current developments initiated by WHO (such as the WHO healthy workplaces framework, the WHO Mental Health Gap Action Programme and WHO occupational health and safety data sets), by distinct initiatives of the ILO and EU agencies (such as data sets and surveys of the European Agency for Safety and Health at Work, Eurostat and the PRIMA-EF project), by internationally comparative scientific investigations (such as the Survey of Health, Ageing and Retirement in Europe and European Social Survey) and by most advanced monitoring activities of individual countries, such as Denmark, France, Spain and the United Kingdom; and
- promoting best practice models within countries and developing novel approaches (such as the Work Security Index and participatory action methods) with the aim of identifying unmet work-related health needs of disadvantaged and poorly organized parts of the workforce within high-income countries.

5.2.2.2 National level

This recommendation addresses:

- developing regulations and programmes to prevent or mitigate adverse health effects resulting from large-scale job instability or redundancy, such as due to massive organizational downsizing or major restructuring of productivity sectors;

- enforcing regulations concerning working time, long working hours, shift work and exposure to hazardous chemical, physical and psychosocial factors;
- promoting family-friendly work arrangements, with special focus on employment opportunities for working women, taking account of their health needs, protecting them against violence and harassment and providing adequate support services;
- reducing involuntary early retirement and promoting policies that maintain the work

- ability and labour market participation of older employees; and
- developing comprehensive occupational health services by applying validated assessment tools, by emphasizing primary prevention measures at the structural, interpersonal and individual levels and by providing early and appropriate rehabilitation measures for chronically ill and people with disabilities, using established models.

5.2.2.3 Local level

Promote efforts towards securing and extending healthy work and employment conditions at the subnational level of sectors, occupational groups, companies and single enterprises and of collaborative links with community health promotion programmes.

This recommendation addresses:

- developing voluntary agreements between stakeholders and social partners to supplement and endorse legal regulations and to tackle new challenges by adhering to equality guidance and legislation;
- giving priority to providing occupational health and safety services to high-risk occupational groups and specific vulnerable groups within the workforce;
- implementing workplace health promotion programmes that translate innovative

scientific knowledge into practice, such as new evidence on chemical or physical occupational hazards, improving control and autonomy at work, limiting excessive work demands, developing a culture of reward and fairness at work, training leadership and securing fair wage and promotion policies; and

- developing a climate and social movement of sustainable health at work by linking company-level preventive activities with community health promotion programmes and by raising awareness of the benefits of healthy work among decision-makers and the wider public.

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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

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