

An editorial in The Lancet last year described social variations in health as 'the United Kingdom's biggest issue'. Social inequalities in health, and particularly in healthy life expectancy (i.e. the average number of years to be spent in good health), are not unique to the United Kingdom. A recent European survey uncovered similar inequalities in all European countries and showed a stepwise increase of the risks of ill-health and premature death with decreasing socio-economic standing. It is not uncommon to find a gap in life expectancy of anything between five and ten years between people at the top and those at the

Social Variations in Health Expectancy in Europe

An ESF interdisciplinary programme in the social and medical sciences



bottom of the social scale while the gap in healthy life expectancy is even larger (e.g. up to thirteen years in a recent Finnish study). In addition, there is growing concern that inequalities are widening as demonstrated by most recent data from Denmark, Finland, Spain, Sweden and the United Kingdom.

Reduction in inequalities in health is now a priority for several European governments. As expert groups advise politicians on development of policy, it is recognised that although there has been substantial progress in the field of inequalities in health, the research base is still inadequate. Finland, the Netherlands, Sweden and the United Kingdom, for example, have launched research programmes to determine the key intervention points at which to reduce inequalities in health. The scale of the scientific problem is large and means sorting through the complexities of the causes of inequalities in health in order to determine where the chain of causation could potentially be broken.

There is now a substantial amount of research in Europe and, more recently, in North America, on this subject. Progress that has been made in the recent past has advanced the field substantially. At this stage of development, an ESF programme on social variations in health expectancy in Europe holds great promise for significant advances in scientific understanding that will be crucial to the development of evidence-based health policy.



The European Science Foundation acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European initiatives.

Introduction

The past twenty-five years of social epidemiological research on health inequalities have provided basic tools, standardised methods and rich empirical evidence. Most importantly cross-national comparative analyses on socio-economic differences in mortality in Europe revealed a consistent pattern of a stepwise increased risk relating to lower educational and occupational standing. These substantial findings were obtained from a Concerted Action, sponsored by the European Union, in which teams from fifteen countries participated.

Social differences in mortality were found to be particularly large in France and Finland. Moreover, the social gradient was steepest in the age-group 30-64 years, and it was more pronounced in men than in women. Interestingly, the underlying causes of mortality vary between northern and southern European countries: social gradients of mortality in the northern countries are most evident for cardiovascular and especially coronary heart diseases, whereas in the southern countries, neoplasms show the most consistent pattern of socio-economic differences.

One of the most important findings of cross-national research in this area concerns the growing gap in life expectancy between the western and the central and eastern European countries: after a period of convergence in life expectancy between east and west (from 1950s to about 1970), the gap increased substantially, mainly due to the fact that the age-specific death rates in middle-aged (male) populations increased rather dramatically in almost all central and eastern European countries.

Despite the persistence of socio-economic differences in mortality, there are substantial variations between countries in the magnitude and patterns. This raises the question of what factors may influence the observed mortality differences. In other words, building on the achievements of current social-epidemiological research, it is now the task of science to move from describing towards *explaining* social variations in health.

In this regard, substantial progress has been made most recently, mainly due to three separate lines of research developments:

- i. The availability of data from longitudinal (and, in particular, birth cohort) studies, that demonstrate the dynamic interaction of biological and socio-economic/psychosocial factors in a *life-course perspective*.
- ii. The design and successful testing of theoretical models that seek to explain social variations (a) in health-adverse behaviours, and (b) in *exposure to stressful psychosocial and material environments* and their adverse effects on health.

iii. Progress in multilevel analysis of large datasets which link information on the *macrosocial environment* (e.g. income inequality, labour market dynamics, participation in social capital) with variations in morbidity and mortality.

Several European research teams that were involved in the preparation of this programme have made original scientific contributions to these substantial recent developments. Right now, these teams are ready for intensified exchange and design-specific collaboration in the framework of a scientific programme that puts its main focus on the advancement of explanations of social variations in health.

The European dimension of such a programme is essential for the following reasons:

- First, no single European country is able to offer the full scientific expertise needed to further advance the state of knowledge as quickly as possible; hence, a collaborative effort of the very best European research teams in the field is instrumental in reaching this goal.
- Second, in a field that links social and biomedical science, cross-cultural research is invaluable as it offers opportunities for testing the explanatory role of specific factors in different social-cultural settings. In particular, the combination of psychological and sociological information on the one hand and of biological and biomedical information on the other hand has the potential of exploring causal pathways underlying observed statistical associations.

- Third, certain crucial determinants of variations in health between countries can best be studied by means of cross-national comparisons. In particular, this holds true for variations in income distribution between countries, for rates of unemployment or migration and for measures of participation in social capital. Rapid socio-economic change across Europe provides a unique opportunity for testing respective hypotheses.

- Finally, while the majority of studies have been conducted in northern and western Europe, an extension of explanatory research activities to southern Europe would be most beneficial to better understand the currently observed 'epidemiologic transition'.

Programme approach

Social Variations in Health Expectancy in Europe is an ESF programme to advance most recent promising research developments in this field. More specifically, three working groups have been established which focus respectively on the three research clusters mentioned.

The *working groups* will address the question of socio-economic variations in health expectancy in Europe through a focus on:

- i. *Life-course influences on health.*
- ii. *Health effects of stressful environments in adult life: the interaction of biological and psychosocial factors.*
- iii. *Macrosocial determinants of morbidity and mortality.*

In Working Group I, emphasis is put on the cumulative effects of exposures linked to socio-economic status, including the long-term effects of early-life factors on adult health. Here, the *microsocial environments* of the family, including (for children) the school, and (for adolescents and young adults) the community and peer group networks, will be given special attention.

Working Group II deals with distinct *stressful environments* at the *mesosocial level*, most importantly the work environment and the work/non-work interface in adult life. Again, transdisciplinary approaches toward understanding pathways from exposure to stressful environments via resource activation to disease vulnerability are needed.

Working Group III puts its focus on the *macrosocial environment* of total communities, regions or nations. In this approach, determinants of

Programme objectives

The programme will concentrate on:

- advancing explanations in the three research clusters mentioned, with particular emphasis on *transdisciplinary collaboration in biomedical and social science research teams*. This is best achieved by establishing three respective working groups whose workplans are defined by a common research agenda;
- the programme will have a strong *science transfer* component across Europe, both within the programme itself and building upon related ESF programmes, in particular 'Environment and Health';
- the programme will have an *impact on European health policy* activities by informing responsible agencies and bodies about major research results and their implications e.g. for the design of preventive measures.

particular patterns of morbidity and mortality in populations are identified which cannot be detected at the level of individuals nor at the level of mesosocial environments such as work settings.

A research programme which proposes to establish three working groups offers opportunities to maximise benefit from separate and combined work due to the fact that different levels of analysis (micro-, meso- and macrosocial environments) are dealt with, that different periods of the life course are emphasised (early life, adolescence, adult life), and that different research methodologies (biomedical and social sciences) and study designs (longitudinal, cross-sectional, experimental) are used.

integrating distal factors (examined in Working Group III of the programme) to factors specific to particular environments and individuals (an aspect covered in the Working Group II).

The major goal of Working Group I is to contribute to the understanding of how factors at different life stages are involved in the development of health inequalities. This development and refinement of the life-course perspective will be invaluable for later work which should ultimately seek to integrate life-course and macro-level influences. Such an integration of approaches is the first and essential stage for the analysis of the effects of broader social changes (including policy interventions) on life-course trajectories across the socio-economic hierarchy.

Longitudinal data, particularly from cohorts followed up from (before) birth, are the essential resources for developing and testing life-course models and the wider explanatory frameworks to which they contribute. As a result, the datasets already available, for example in the UK, are currently playing a prominent role in advancing life-course analysis, and we anticipate that further European studies will play an important role in future research into life-course influences on health inequalities.

Working Groups

Working Group I:

Life-course influences on health

Overview

This working group focuses on a rapidly developing field of health inequalities research which is widely regarded as holding great promise for advancing scientific understanding of the causes of health inequalities and for the development of policies to temper them.

The life-course perspective is distinguished by the underlying hypothesis that health inequalities are the outcome of cumulative differential exposure to adverse environmental conditions and to behavioural and psychosocial risks. The life-course approach thus draws attention to the 'middle-range' links in the causal chain running between socio-economic status and health,

Core tasks

A number of core tasks have been identified for this working group, including methodological advancement and the testing of key concepts and models. However, it is important that these tasks are not seen as, and do not become, ends in themselves. Rather, they provide broad stepping stones through which to achieve the objectives of the programme as a whole: namely, to advance scientific

explanations of health inequalities in ways which transfer knowledge across disciplines and European countries and which feed into health policy. To ensure that the working group keeps the overall objectives in mind, the first year of the life-course thrust of the programme will be concerned with:

- i. sharing and reviewing the latest developments in the life-course perspectives; and
- ii. identifying and comparing data sources against which these perspectives can be tested and refined.

As with the other two working groups, the workplan for the remaining years of the programme will be developed on the basis of this in-depth and critical review. The two-stage approach will also enable each working group to move with the field: to take account of and contribute to the emergent and cutting-edge scientific models and methods. The two-stage approach means that the composition of the working group is likely to combine both continuity and change. For example, we envisage inputs in year one from participants who are able to contribute to the conceptual development of life-course perspectives and also to their policy application but who may not continue with the detailed theoretical, methodological and policy-related work conducted in years two, three and four.

First year workplan

The first year workplan will review the range of conceptual frameworks and methodological approaches which constitute the current 'state of the art' in life-course research in health inequalities. Issues and

questions to be addressed in the first two workshops include:

- i. Development of life-course models which integrate biological with environmental, psychosocial and behavioural influences on health across the life-course, clarifying the influence of gender and ethnicity on socio-economic trajectories, on socio-economic patterned exposures and on their health effects.
- ii. Identification of concepts and methods for data analysis to improve the methodology of longitudinal research and to refine and develop statistical techniques.
- iii. Review of available longitudinal datasets and their associated research centres and data archives to identify the potential for collaborative and cross-survey analyses.
- iv. Discussion of opportunities for comparative European research and policy development as potential foci for the workshop programme in years two, three and four.

Working Group II:

Health effects of stressful environments in adult life: the interaction of biological and psychosocial factors

Overview

This working group deals with interactions of three types of factors that mediate social inequalities in health: biological, behavioural, and psychosocial. The identification and measurement of behavioural and biological risk/protective factors is not part of the programme as respective knowledge is available from other disciplines. On the other hand, identification and measurement of psychosocial factors is a key element of the programme and a prerequisite to the study of their contribution to the development of disease, independent from, and in interaction with, behavioural and biological factors.

Three strategic decisions were proposed in the programme to focus work more clearly:

- to concentrate on the age span of adulthood ('productive' and early old age; around 30 to 70 years);
- to emphasise stressful/protective environments at the mesosocial level (e.g. work environment, civic life, family/home/leisure);
- to study interactions of biological, behavioural and psychosocial factors in those diseases which justify an interdisciplinary approach (e.g. evidence of stress-physiological pathways) and which ideally follow a social gradient.

The major goal of Working Group II is to contribute to the understanding of how the psychosocial environment (e.g. core social roles in adult life) affects health via autonomic nervous system activation and adverse health behaviours. A combi-

nation of social-epidemiological and psychophysiological-experimental study designs including ambulatory monitoring techniques seems most promising to advance the field.

Core tasks

The following core research questions have been identified for this working group:

- i.** What is the role of most prominent models of health-related behaviour in relation to models of stressful/protective psychosocial environments? Do they act in concert to produce social variations in health?
- ii.** What is the role of psychological components (personality, coping patterns) in relation to sociological factors defining the psychosocial environment? How can we best model the relationship between these two sets of variables (e.g. does an adverse social environment amplify the effects of a particular person's characteristics in relation to health?).
- iii.** What are the most promising theoretical concepts of identifying stressful/protective psychosocial work environments? To what extent do they account for documented social variations in health? How are they linked to non-work psychosocial conditions (e.g. spillover, compensation, cumulation)?
- iv.** What are the stress-theoretical bases of the working programme? Is there evidence for disease-specific versus generalised pathophysiological mechanisms linking adverse psychosocial environments to ill health? What are the most promising and feasible biological markers of strain reactions? How do we combine information on objective and subjective health status?

These questions will be dealt with by reviewing evidence in related fields, by discussing the 'state of the art' with eminent experts, and by elaborating an operational workplan based on these discussions.

First year workplan

The first year workplan will review theoretical approaches and methodological developments within the four areas mentioned above. Special emphasis will be put on quality criteria of social and behavioural methods to be possibly included in ongoing or planned investigations. Core elements of identical study designs will be discussed to enhance comparative research at different European sites.

The decisions and directions agreed upon during this first stage (which may require more than one year) will largely determine the workplan of the following years, both in terms of workshop contents and participants. However, the programme target of dissemination of expertise across European countries will be given equal weight, enabling the participation of young researchers. In addition, policy implications of current scientific evidence will be addressed throughout the programme.

To be fully successful, the workplan will require an in-depth dialogue with the two remaining working groups at predefined time intervals.

Working Group III:

Macrosocial determinants of morbidity and mortality: their contribution to the explanation of inequalities in health

Overview

Most attempts at explaining socio-economic inequalities in health focus on personal characteristics, e.g. behavioural, psychosocial or biological factors measured at the individual level, or on characteristics of the micro- or mesosocial environment, e.g. social support or job demands. This is mainly due to the fact that these characteristics can be studied relatively easily within the framework of individual-level studies, which are seen to be the most powerful research designs for analysing causal relationships in the biomedical as well as in the social sciences.

Yet, an exclusive focus on these 'proximal' parts of the causal chains linking socio-economic factors and health may obscure the fact that social variations in personal characteristics and micro- and mesosocial factors are themselves due to macrosocial factors operating at a societal level. Over the past decade important progress has been made in studying the impact of these more 'distal' factors. A number of potentially important factors has been identified, such as the inequality of income distribution across a society, the degree of social cohesion between society's members and their participation in the available social capital, and the ongoing structural change in the labour market.

These appear to be powerful explanatory constructs, with a clear impact on health and also holding great promise for the explanation of socio-economic inequalities in health. The

research findings support the notion that some powerful determinants of health are characteristics of society as a whole rather than being a characteristic of the least privileged groups within it. These results, if further substantiated, would also have far-reaching implications for health policy measures.

The ESF programme offers excellent opportunities for further development of this research area. Bringing together leading experts in this field from Europe will offer possibilities for conceptual development and refinement of research methods. Also, international comparisons of socio-economic inequalities in health and the macrosocial factors explaining these between-country differences are likely to lead to important new insights into how characteristics of societies at large contribute to inequalities in health. Finally, the links between Working Group III and the other two working groups will offer good opportunities for studying the effect of macrosocial factors over the life-course and on psychosocial factors, respectively.

Core tasks

A number of core tasks have been identified which will guide the activities of Working Group III, but which will of course be further developed as the work progresses. These core tasks include:

- i.** Identification of data sources and attempts at further standardisation. The study of macrosocial determinants requires the availability of datasets which include (variation in exposure to) macrosocial factors (such as income inequality, social cohesion and labour market dynamics) as well as the more usual data on socio-economic factors, health outcomes and 'proximal' determinants at the individual and micro- and mesosocial level. Recently, new datasets have become available at the national and supranational level in Europe, and progress has been made with the comparative analysis of such data. This work will be extended, and possibilities for analyses at other levels of aggregation, such as regions or cities, will also be explored.
- ii.** Development of methodological guidelines. Based on the exchange of research findings, methodological guidelines will be discussed and refined. Important issues include the choice of indicators for macrosocial factors, the choice of an adequate level of analysis, the application of multilevel analysis, and the adjustment for individual-level relationships.
- iii.** Comparative multilevel analysis. An area which holds great promise for explaining socio-economic inequalities in health concerns the linkage of individual-level data (including socio-economic factors, health outcomes and 'proximal' determinants) with aggregate data on the macrosocial environment. It is expected that within Working Group III such analyses will be performed to test specific hypotheses of the contribution of macrosocial factors to the explanation of socio-economic inequalities in health.

First year workplan

During the first year the area to be covered will be explored in more detail, and a specific workplan for the remaining three years will be made. This implies that the composition of the working group may also change during the process, shifting from a broad coverage of all possibly relevant aspects in the first year to a more focused representation of researchers who can contribute to the actions decided upon for later years. During the first year the following issues will be addressed:

- i. Development of a conceptual framework. Based on the current insights into the explanation of socio-economic inequalities in health, and on the available opportunities for empirical research, a limited set of macrosocial factors will have to be identified on which the ESF programme will focus. For each of these macrosocial factors, a number of conceptual issues will have to be discussed, including definitions and operationalisations and a theoretical framework linking the macrosocial factor to the existing explanatory models for socio-economic inequalities in health. It is envisaged that literature reviews will have to be made, covering not only key publications in social epidemiology and medical sociology but also in other disciplines.
- ii. Identification of data sources. An inventory of relevant data sources in Europe will be made, and the availability of information on the areas to be studied will be assessed. On the basis of this inventory, feasible plans for analyses to be carried out in subsequent years will be made.

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More information

More information about the programme is available on the World Wide Web:
<http://www.uni-duesseldorf.de/health>

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Life-course influences on health:
research is now being directed
at understanding how childhood
influences affect health in
adulthood.

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