



Health and well-being: Does our environment matter?

A report of an open seminar organised by the MRC Institute for Environment and Health and held at the NSPCC National Training Centre, Leicester, on 28 November 2000

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Introduction

The Government's White Paper 'Saving Lives - Our Healthier Nation', sets out ways in which government, other agencies, communities and individuals can improve human health and well-being. While individuals have a responsibility for their own health by taking actions such as regular exercise, eating a healthy diet and not smoking, there are other factors that can impact on health (e.g. unemployment, poor housing, poverty and environmental pollution) that are often largely beyond the control of the individual.

The socio-economic model of health (adopted by the Independent Enquiry into Inequalities in Health) focuses on the main determinants of health and well-being as layers of influence. These layers include fixed constitutional factors (e.g. age), lifestyle behaviours (e.g. smoking habit) and social and community influences (e.g. family, local community). Broader aspects such as living and working conditions and access to services are, in turn, bounded by the overall economic, cultural and environmental conditions of a society as a whole. Importantly, the model emphasises the interaction between these layers of influence. For example, individual life-styles are embedded in social networks and in living and working conditions, which, in turn, are related to the wider socio-economic environment.

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It was against this background that the MRC Institute for Environment and Health (IEH) hosted its second annual seminar *Health and Well-being: Does our Environment Matter?* The overall focus of the meeting was to explore the relative importance of key health-influencing factors (social, environmental and psychological). The seminar attracted a wide range of delegates from the research community, national and local government, health professions and interest groups. Some 16 speakers and facilitators presented papers during the one-day meeting giving their views on the many aspects of human health and well-being.

The meeting opened with a broad overview of environmental influences on human health and well-being. Based on a study conducted in different localities in Glasgow, it was argued that both physical and social features of the environment interact to influence physical and mental health. For instance, residents in two areas in Glasgow (an affluent locality in the northwest and a more deprived area in the southwest) were asked about their exercise habits. After controlling for factors such as age and sex, it was found that a much higher proportion of residents in the affluent areas

took exercise compared to those from the deprived localities. There were more recreational facilities available to residents in the affluent area and people in this locality also perceived their environment as safer than those in the deprived areas. A second key message from this research is that environmental advantage or disadvantage may amplify personal advantage or disadvantage, and those whose health is potentially compromised by poverty, etc. are most likely to be exposed to health-damaging environments (domestic, occupational and recreational).

What is good health?

How we define 'good' health and well-being is central to any discussion about what influences health, and the first main session of the meeting explored issues around the concepts of population health, the healthy individual and inequalities in health. The current goal of public health policy is to improve population health and narrow the health gap by tackling social disadvantage through cross-Government departmental activities. Epidemiology underpins public health medicine by studying variations in health and disease across time, place and person (populations). The annual Health Survey for England demonstrates substantial variations between different areas across a range of health indicators and risk factors. Some of this variation is explained by sociodemographic factors; but even after adjustment for these elements much variation remains, suggesting other possible influences including environmental and individually driven factors (e.g. health perceptions). Psychological research demonstrates that a key feature of health and well-being at an individual level relates to individual perceptions of health. So-called objective measures of health (e.g. the presence or absence of a particular disease) do not necessarily correlate with self-reported health status. In other words, an individual's personality, beliefs and social environment can play a significant role in health and well-being. Despite advances in medicine and improvements in environmental quality, people are feeling less healthy, and experience and report more symptoms than they ever used to. Perhaps advances in medicine, leading to increased health expectations, and the influence of the 'environmental movement' in creating an unbalanced view of our world as risky and unsafe, has contributed towards this.

Social inequality affects health and well-being at both population and individual levels. Inequalities in social and physical environments can have a cumulative impact on health over an individual's

life-span. For example, low educational attainment is often associated with social deprivation. This, in turn, can lead to reduced opportunities for employment, and unemployment and poverty is correlated with ill-health. In addition, social disadvantage is correlated with self-reported health; those in lower social groups report poorer health and often hold a belief that a certain level of ill-health is the norm.

The health and well-being of a population or an individual can be described by a variety of 'objective' measures such as gross mortality, disease incidence, and physical measures such as blood pressure. Indicators of well-being such as self-reported non-specific symptoms and psychological measures can also describe health. The focus for improvements in health and well-being can, therefore, vary from improving overall health at a population level (e.g. increasing life expectancy, reducing incidence of cancer), reducing inequalities in health (e.g. gender, ethnic and social inequalities), to promoting health and well-being at an individual level (e.g. reducing smoking and alcohol intake).

Social influences on health

The second session of the meeting addressed some of the key social factors that may influence health and well-being.

The direct link between factors associated with poor housing (e.g. cold and damp) and ill-health is well established. However, a recent evaluation of the effects on health of housing improvements in the Central Stepney Single Regeneration Budget (SRB) area also demonstrated the importance of indirect links. For example, a seven-fold improvement in health status (based on incidence of self-reported illness days) was recorded following the implementation of a housing improvement scheme. While significant health gains were achieved as a direct result of housing improvements, other factors such as increased 'community solidarity' and reduced perceptions of crime risk were also important.

While the correlation between inequalities in education and health and the effects of health status on educational achievement are well established, the extent to which education per se influences health is less well understood. Nonetheless, a few studies have demonstrated that education can play a 'potentiating role' by triggering healthy lifestyle choices (e.g. qualification level is a better predictor of non-smoking

behaviour than social class), and that it is linked indirectly to health by enabling access to employment and other important life opportunities ('protective role'). The extent to which education can play a role in reducing health inequalities is an issue of debate, and a large body of research suggests that a significant group of children live in such disadvantaged circumstances that their opportunities to benefit from education are particularly limited. While there is now a consensus that multi-agency interventions during early childhood (e.g. 'Sure Start'*) present opportunities for improving educational attainment, policies that tackle the root causes of social disadvantage are likely to make a more significant contribution to improved health and well-being than those that address patterns of educational inequality alone.

There is a strong and consistent correlation between low income and ill-health and a widening gap in household income has been similarly matched by an increase in health inequalities between the richest and poorest in Britain. Research shows that the incidence of disease/disability, illness and psychosocial ill-health all decrease with an increase in household income. The highest incidence of ill-health (measured by premature deaths) occurs in the poorest areas of Britain (Glasgow, Tyneside, Liverpool, Manchester and certain areas of London). Affluent areas that tend to be located in southern and central England experience the lowest prevalence of ill-health. While the national median income has increased by around 40% in the past twenty years, those in the lowest income group have experienced a real decline and those in the highest income groups have experienced a disproportionate increase. Poor health has mirrored this pattern and has become concentrated both by social group and geographical location.

The relationships between social factors such as income, education and housing (as individual elements) and health are complex. In addition, these factors are interrelated and often act both directly and indirectly to have a cumulative impact on health and well-being. The challenge to achieving the goal of narrowing current inequalities in health is to unravel these relationships and design interventions that address the complex nature of social disadvantage.

* Sure Start is an initiative that aims to work with parents and children to promote the physical, intellectual and social development of pre-school children, particularly those who are disadvantaged.

Environmental influences on health

In addition to the impact of the social environment on health and well-being, issues relating to the physical environmental were discussed at the meeting, with presentations on diet and water, land and air quality.

Most cancers are preventable and changes in lifestyle behaviours (e.g. smoking and alcohol intake) could greatly reduce cancer risks. It is estimated that between 50% and 60% of cancers are linked to diet, pointing to the importance of health education and dietary changes as primary cancer prevention tools. There is considerable public interest in the presence of xenobiotic chemicals (e.g. pesticides) in food and the possible link with ill-health. However, evidence suggests that natural food constituents and the physiological and biochemical processes associated with food digestion that result in the formation of reactive species capable of modifying DNA are potentially important contributors to the link between diet and ill-health. While much uncertainty surrounds the question regarding the extent to which diet-related DNA damage contributes to cancer incidence, large cohort studies offer the opportunity to unravel the complex relationship between diet and health.

There is much public concern about the effects of air quality on health. Short-term effects of poor air quality have been quantified (using measures such as hospital admissions, asthma symptoms, etc.) and have been shown to be small at the individual level but significant at the population level. Much more uncertainty surrounds chronic effects and latent effects such as cancer. Numerous difficulties are associated with the assessment of the impacts on health of air quality. For example, the focus of most research has been on the outdoor environment while most exposure actually occurs indoors, and the heterogeneity of a population makes it difficult to determine a 'typical' exposure and response. The amount of funding given to this topic in the UK is small and declining; a cause for concern considering the potential public health impacts of poor air quality. There is an urgent need for high quality data to fill knowledge gaps and allow better quantification of air quality-related health effects to be made, and hence target control policies most appropriately.

On the whole, public drinking water supplies in the UK are of high quality. Supplies are highly regulated and monitored to protect against natural and anthropogenic contamination by organic and

inorganic chemicals and by microbiological organisms. While investment in water treatment for chemical contamination is significantly greater than for microbiological contamination, the latter presents more risks to public health. For example, outbreaks of illness caused by *Cryptosporidium*, although not a major public health problem in the UK, do sometimes occur and are the focus of much public attention. Clean and safe water supplies are essential, not just for drinking but also for hygiene, food safety and recreational purposes. Tight regulatory standards have played, and continue to play, a role in the UK; these, coupled with substantial investment in water treatment and infrastructure, are essential to maintaining high quality water supplies with minimal risks to human health.

The UK has a legacy of land contamination arising from industrial activity and it is estimated that up to 200 000 hectares are contaminated in the UK. Substantial amounts of remediation will be required to render much of this land suitable for redevelopment. Contaminants include metals (e.g. arsenic, cadmium), inorganic contaminants (e.g. asbestos) and organic chemicals (e.g. PAHs and PCBs), posing a risk to human health through inhalation and ingestion pathways. The UK has a regulatory framework aimed at:

- minimising the future incidence of land contamination;
- ensuring that appropriate action is taken to deal with existing contamination where it poses unacceptable risks to human health and the environment; and
- encouraging the reclamation and recycling of 'brownfield' land for beneficial use.

This framework is based on the 'suitability for use' principle whereby a risk-based approach is used to manage contaminated land. Remediation is required where there are unacceptable risks to health or the environment resulting from the actual or intended use of the site. This policy provides a basis for tackling real hazards where they exist, while avoiding the imposition of unnecessary financial and regulatory burdens.

Psychosocial influences on health

In addition to our social and physical environment, psychological factors can have an important influence on our health and well-being. The perception and reporting of symptoms (illness) can occur in the absence of an identifiable disease with a physiological or toxicological origin (as in the case of chronic fatigue syndrome or multiple chemical sensitivity, for example). The concept of the 'mental model' has been identified as an important contributory factor (alongside biological changes) in influencing health and well-being. An individual's representation of the world (knowledge, attitudes and beliefs) strongly influences their interpretation of internal and external events. It is well established that as individuals we make 'choices' about which pieces of information we focus on and how we interpret these amongst all the available information around us. Selective attention is determined by both internal and external factors. For instance, selective internal attention may be heightened by factors such as working/living in an unstimulating environment or by a lack of interaction with others, while external factors may include heightened risk perceptions and attitudes about science and medicine. In farmers working with sheep dipping pesticides, the importance of the interaction between physical and psychosocial factors in influencing physical and mental health has been shown. While there is a good understanding about the acute effects of exposure to, and the chronic effects of, poisoning from organophosphate sheep dips, there is much uncertainty around the issue of chronic effects associated with long-term, low-level exposure. A recent study of health problems (unexplained symptom syndrome) experienced by farmers exposed to sheep dips showed that mental health problems (anxiety and depression) were associated not only with handling sheep treated with organophosphate pesticides (i.e. exposure to hazardous chemicals), but also with factors such as life satisfaction (e.g. isolated working conditions and major economic stresses) and personality traits.

The role of the media in shaping individual and social responses to environment and health risks has received much attention in recent years. Preliminary findings of UK-based research into the role and impact of the media as important transmitters of risk information were outlined. This research tracked the reporting of five risk issues — air quality, genetically modified (GM) foods, radon, train accidents and the Millennium Bug — in various forms of the media and explored how the

public receive, filter and evaluate this information. Patterns of reporting and interpreting risk varied substantially between the different media. For example, a comparison of tabloid and broadsheet newspapers showed that the former tend to focus on areas of risk that relate to routine aspects of daily life, such as road travel, and frequently covered stories that were prompted by the experiences of members of the public. Conversely, broadsheet reporting of risk-related stories was often prompted by academic and scientific activities and tended to quote expert sources far more frequently than tabloid reports. However, the view commonly held by many institutions that the media is a significant 'risk amplifier' was brought into question by the study's findings on how the public use the media to gain information and interpret mediated risk messages. For example, the research demonstrated that lay people have 'media savvy' (i.e. an understanding of media hype) and also that people don't expect to receive detailed or necessarily accurate assessments of risk-related stories in the tabloid media. In addition, because individuals gain their information from a variety of mediated sources, constructions of risk are the result of a combination of different information sources and frames.

Summary

A broad consensus was reached that it is a complex combination of physical, social and psychological factors that influence our health and well-being. While there are concerns about environmental quality and health, such as the current uncertainties that surround our understanding of the effects of air pollution on health, and the significant task that lies ahead in remediating the large amounts of contaminated land in the UK, it is the social and psychological factors that perhaps present both the most potential for, and greatest challenge to, improving health and well-being and to tackling widening health inequalities in the UK.

Acknowledgements

Special thanks go to the speakers and facilitators who gave their valuable time to participate at the meeting:

Keynote speech

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Many thanks also go to those delegates who displayed posters at the event.

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