and to mobilise EU policies towards reducing health inequalities. As far as possible, the health protection provided by EU policies should extend to all citizens irrespective of where they live or their social background. EU actions should support improvements in the health of the whole population, but with an emphasis on reducing avoidable and unfair gradients in health between social groups and EU regions – i.e. a ‘leveling-up’ approach. In fulfilling these aims EU actions can make a contribution towards a reduction in health inequalities in the EU. A first report on progress will be produced in 2012.

REFERENCES

Health inequality

Why is it important and can we actually measure it?

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Summary: Health inequalities are present in most European countries and evidence of widening inequalities is shown in a number of national and international studies. However, the measurement and monitoring of health inequalities over time and across countries is not straightforward since the choice of measure will influence the results. Numerous measurement tools have been developed for measuring health. Results can be affected by not only the choice of indicator but also by the social group for analysis. The focus of the paper is mainly on the relationship between relative and absolute inequalities discussing the role of the statistical artefact.

Keywords: health inequality, absolute versus relative inequality, statistical artefact

“Health is a universal human aspiration and a basic human need. The development of society, rich or poor, can be judged by the quality of its population’s health, how fairly health is distributed across the social spectrum, and the degree of protection provided from disadvantage as a result of ill-health.”¹ Health inequalities can be defined as ‘the systematic and avoidable differences in health outcomes between social groups such that poorer and/or more disadvantaged people are more likely to have illnesses and disabilities and shorter lives than those who are more affluent’². Evidence of socioeconomic inequalities in health can be found as early as the 19th century. In recent decades there have been a large number of national and international studies on health inequalities, given the increasing evidence of widening inequalities in Europe.³ However, the measurement and monitoring of inequalities in health over time and across countries is not straightforward since the choice of the measure will influence the results. No consensus has been reached on the best and most meaningful measure. Numerous measurement tools have been developed for measuring health. These can be differentiated into macro- and micro-level health indicators. Population summary measures such as life expectancy and infant mortality are extremely useful for estimating changes in overall population health and the global burden of disease across countries or within a country over time, but may

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provide minimal indication of the underlying factors (such as education, housing, income, geographical allocation of resources) that may be influencing health attainment. Efforts are under way at an EU level to collect macro-indicators by educational or income level and also at the regional level within the I2SARE project (Health Inequalities Indicators in the Regions of Europe – www.i2sare.eu).

In recent years, various summary measures of population health have been developed to encapsulate information on both mortality and morbidity within a single indicator, for example healthy- and disability-adjusted life expectancy. Avoidable mortality, or causes of death that should be avoided in the presence of timely and effective health care, represents an alternative measure of population health and allows us to identify improvements in health attributable to the health system, broader public health policies and also changes in lifestyles.

At a micro-level, objective health measures such as blood pressure and body mass index are important both clinically and from a health systems perspective, but data are often expensive to collect and may be subject to measurement error. Conversely, self-assessed measures such as general health (usually ranging from excellent to poor) and limitations in daily activities are found to be good predictors of mortality and are commonly available, although they may be sensitive to variations in socioeconomic conditions and individual expectations, as well as the wording and meaning of assessment questions. Developing an index of health on the basis of several indicators, or including vignettes in surveys, are two possible methods of reducing systematic bias associated with general measures of self-assessed health. Various indicators of health status (objective and subjective) are collected in the Survey of Health, Aging, and Retirement in Europe (SHARE) and the European Core Health Interview Survey (ECHIS).

When the researcher has decided which health indicator to use, the appropriate socioeconomic determinant should be chosen from individual income, income inequality, education, and employment. The curvilinear relationship between GDP per capita and life expectancy is well known and implies that above a certain threshold the association between absolute income and health weakens or even disappears. Thus, in richer countries, income distribution rather than income per se is a determinant of health. Although there is a large body of literature on the negative relationship between income inequality and average population health, still no agreement has been reached. Indeed, it is plausible that the association between health indicators such as life expectancy, infant mortality and income inequality simply reflects the non-linear relationship between health and income at the individual level, known as a statistical artefact or the absolute income hypothesis. It is widely accepted that at the individual level higher income individuals enjoy better health. This curvilinear relationship between income and health at the individual level creates an artefactual relationship between income inequality and health at the population level. A curvilinear relationship implies that if there are hypothetically only two individuals A and B with incomes Ya and Yb, with Ya>Yb, and health status Ha and Hb, with Ha>Hb, then a reduction in income inequality (reallocating money from A to B) would result in an increase in average health, although average income remains unchanged. However, is it plausible that all of the association between income inequality and health is explained by this statistical artifact alone?

Systematic reviews were performed by Deaton,5 Lynch et al6 and Wilkinson & Pickett.7 Overall, Lynch finds that income inequality is not associated with average population health across rich countries, with the exception of studies performed within the US (local and regional studies). On the contrary, according to Wilkinson & Pickett there is strong evidence of a relationship between income inequality and health. Only a minority of the 168 studies they analysed failed to identify an association between income distribution and health. They grouped studies with ‘unsupportive evidence’ into three broad categories. First, some studies measured inequality in an area too small to properly measure any relevant income inequality. Although it is believed that individuals compare themselves to those perceived to be their equals,8 this does not mean that they are not aware of their rank within society. The authors argue that the health of individuals living in poor neighbourhoods is bad not because of inequalities within the neighbourhood but because of inequalities in all of society. People living in more unequal societies have higher rates of crime, violence, teenage pregnancy and obesity and are less likely to be involved in community life and hold less trust in the government. Second, some studies with ‘unsupportive evidence’ controlled for factors such as education and ethnicity, assuming them to be mediating variables for social class stratification rather that genuine confounders. Indeed, the authors conclude that relative income, not absolute income, is the main determinant of health, and that individual income, as well as education and ethnicity, is a proxy for social position and therefore should not be controlled for. Third, during the 1980s and early 1990s the relationship between income inequality and health, in particular life expectancy, temporarily disappeared although income inequalities increased. Wilkinson & Pickett give three different explanations for this effect. Firstly, there was a rapid decline in the mortality of older people, in particular cardiovascular mortality, due to improvements in primary and secondary preventive care. Secondly, the distribution of poverty in society changed. Young families with children, as well as older people, were also likely to be poor. Thirdly, that an income inequality lagged effect on health, in particular for older people, is plausible and this would explain why the relationship between income inequality and infant mortality did not disappear.

Should we therefore believe that the relationship between income inequality and health is fully explained by a statistical artefact (or absolute income inequality theory) or should we instead believe that only relative income matters and therefore individual income should not be included in the analysis as this will bias the results? Clearly not all the evidence in favour of income inequality can be explained with the statistical artefact theory.7,9 In rich countries the absolute income hypothesis does not hold and income inequalities are the main determinants of health, however in poor countries an average increase in income is positively associated with average health.

So far we have only discussed the role of income on health, however many papers use education or employment status as an indicator of socioeconomic status. The choice of social group might affect results. For example, the use of income, employment status or educational level as indicators of socioeconomic position might bring us to different conclusions simply because the social structure of a country might change over time. If between two time periods, educational
inequalities decrease (the number of people with a lower level of education halves while the number of people with higher education increases) – everything else remaining constant – then health inequalities by educational level measured in relative terms will be larger than by income or employment level.

Moreover, much confusion surrounds the measurement of inequalities in absolute versus relative terms. Relative inequalities, generally believed to be of most analytic interest, describe the extent to which a health event is distributed unequally across the population (comparing the worse-off with either the better-off or the average population). However, caution is needed when interpreting the results of relative inequalities since they increase (decrease) as a consequence of a decrease (increase) in the overall level of mortality (survival). Nonetheless, absolute inequalities or differences are argued to have some practical value because they indicate the absolute levels of the health event in population groups. For absolute inequalities it is thought that when the overall level of an outcome, such as mortality falls, absolute inequalities inevitably fall too, although the relationship between absolute indicators and the outcome might be quite complex, with many prevailing trends to be shaped as an inverse-U.

However, Houweling et al have shown that low levels of mortality can be achieved together with low levels of health disparities. Indeed, a recent US study shows that there is no clear relationship between level of health and relative inequalities. From 1960 to 2002 premature mortality and infant death declined in the US for all income quintiles; however socioeconomic and racial inequalities decreased in the period 1960–1980, then increased, while absolute inequalities remained quite stable. Therefore the pattern of relative inequalities is more related with historical circumstances, social context, public health and economic priorities rather than the overall level of health.

To conclude, although the measurement of health is essential for evaluating and comparing changes within and across societies, both in a specific time period and over time, no agreement has been reached on the best health indicator. In fact the choice of indicator and outcome largely affect the results. Therefore, a systematic strategy is necessary when monitoring inequalities in health. Policy makers and researchers should firstly evaluate the data available, and assess its quality, and if necessary collect additional data. Ideally analyses of health interview surveys (with different indicators of self-morbidity and possibly also objective indicators of health) should be accompanied by analyses of mortality registries. Moreover, all three indicators of socioeconomic status – income, education and employment – should be used whenever possible. Finally, both relative and absolute indicators of health inequalities should be tested. An accurate analysis of the data and an appropriate interpretation of the results are essential to formulate ad hoc policy responses.

References

New Health Systems in Transition publication from the European Observatory on Health Systems and Policies

Japan: Health System Review

October 2009
Kozo Tatara, Etsuji Okamoto

Japan’s health system provides universal coverage for the population, with annual expenditure around 8% of Gross Domestic Product. Population health is among the best in the world, with the longest life expectancy and lowest rate of infant mortality.

Recent reforms focus on the ageing of the population including the introduction of a new system of long-term care financed through insurance and administered by municipal governments.

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