

VII. AVERAGE LEVEL OF POPULATION HEALTH

1. WHR 2000

WHO has reported indicators of population health for each Member State for many years, including child and adult mortality risks and life expectancy at birth. In addition, for over a decade WHO has been involved in the development of summary measures of population health (SMPH), which combine information on mortality and non-fatal health outcomes to represent population health as a single number. WHR 2000 reported disability-adjusted life expectancy (DALE) at birth and at age 60, for males and females, with uncertainty intervals around the most likely estimates.

As part of this process, new life tables and life expectancies were estimated for all 191 Member States. Data were taken from different sources. For example, vital registration data were available for 80 countries. In other countries, indirect information on mortality – infant, child and/or adult – was available. At times, UN Population Division estimates of adult mortality were used where no direct sources of data were available. For countries without adequate vital registration data or surveys, estimates were based on regional logit models.

To estimate DALE for each country, the life table data were supplemented with information on age- and sex-specific prevalences of non-fatal health outcomes and appropriate health-state valuations. Health-state valuations were estimated for each major non-fatal health outcome for five standard age groups, by sex, in eight regions. Where the data were available, detailed information on the epidemiology of the major conditions in countries was used to construct prevalence of non-fatal health outcomes, along with the earlier Global Burden of Disease (GBD) estimates. Existing health surveys were also used, but the additional information they provided was limited by problems of cross-population comparability.

2. Main commentaries and criticisms

Summary Measures of Population Health

Much of the discussion about the indicator of the level of health used in WHR 2000 was a continuation of the long-standing debate about the value of summary measures of population health (SMPH). For example, it was argued that SMPH do not describe health in sufficient detail to be useful for policy makers. Reporting the components separately is of more value, e.g. mortality, and prevalence, incidence duration and severity of various non-

fatal health outcomes (Navarro 2001a; Rosén 2001; WHO Regional Office for Africa 2001). Some commentaries criticized disability-adjusted life years (DALYs), stating that by themselves they should not be used for resource allocation decisions (Almeida et al. 2001; Häkkinen 2000; Rissanen and Sintonen 2000). SMPH were seen to be too complex for policy makers to understand (Almeida et al. 2001; Oswaldo Cruz Foundation 2000) and the fact that Life Expectancy at birth (LE) and Disability-Adjusted Life Expectancy (DALE) were highly correlated led some critics to argue that DALE added little that was not already captured by LE (Oswaldo Cruz Foundation 2000; Häkkinen 2000, McKee 2001a; Ugá et al. 2001).

Another concern with SMPH surrounded the valuation of non-fatal health outcomes on the same scale as death and full functioning. Critics of summary measures argued that this type of assessment undervalued the lives of disabled people (Almeida et al. 2001; Oswaldo Cruz Foundation 2000) and also raised other ethical problems (Oswaldo Cruz Foundation 2000; Rissanen and Sintonen 2000; Nord 2002). Others claimed that the valuations used in WHR 2000 did not capture all aspects of quality-of-life or heterogeneity across countries in the way people understood and valued health (DfID 2000; Oswaldo Cruz Foundation 2000; Rissanen and Sintonen 2000; WHO Regional Office for the Americas 2001; Nord 2002). Still others argued that weights should ideally be obtained from representative population groups rather than from a limited group of experts (Almeida et al. 2001; Oswaldo Cruz Foundation 2000; Rissanen and Sintonen 2000; WHO Regional Office for the Eastern Mediterranean 2001).

The word "disability" in DALE also raised concerns: "disability" could be seen as a pejorative term and was not an appropriate word to use to describe a state that is less than full health. Moreover, it does not well capture the idea that health is a multidimensional and complex concept (Oswaldo Cruz Foundation 2000; Häkkinen and Ollila 2000; Van der Stuyft and Unger 2000).

As a key goal in assessing the performance of health systems, a number of authors pointed out that measures such as DALE reflected past as well as current performance, and hence cannot be interpreted as being a function only of current performance (Almeida et al. 2001; DfID 2000; McKee 2001b; Oswaldo Cruz Foundation 2000; Rosén 2001; Häkkinen 2000; WHO Regional Office for Europe 2001; Ministry of Health, Vietnam 2001; McKee 2001a).

A series of specific technical points were also raised about the construction of DALE. For example, life tables estimated for countries where vital registration data did not exist do not fit the oldest age groups well in some countries (WHO Regional Office for Africa 2001; WHO Regional Office for the Americas 2001; WHO Regional Office for the Eastern Mediterranean 2001; WHO Regional Office for Europe 2001; WHO Regional Office for South-East Asia 2001; WHO Regional Office for the Western Pacific 2001). The way in which the estimates of the prevalence of non-fatal health outcomes were obtained, and co-morbidity was handled in developing the overall severity-

adjusted prevalence of non-fatal health outcomes, was seen as simplistic (Navarro 2001a; Rosén 2001; Rissanen and Sintonen 2000; World Health Organization 2001). For example, the prevalence of different types of disability was assumed to be the same in all countries with similar life expectancies (Oswaldo Cruz Foundation 2000; Ugá et al. 2001). In addition, McKee (2001a) argued that in estimating uncertainty intervals around the estimates, all possible sources of uncertainty had not been considered.

The final set of commentaries concerned data sources. It was generally agreed that epidemiological data were sparse and of variable quality in many countries, and that the use of more vital registration data would greatly improve the estimates (McKee 2001b; Oswaldo Cruz Foundation 2000; Williams 2001; Häkkinen 2000; Rissanen and Sintonen 2000; WHO Regional Office for Africa 2001; WHO Regional Office for the Eastern Mediterranean 2001; WHO Regional Office for Europe 2001; Ugá et al. 2001). The available data on child and adult mortality, as opposed to infant mortality, were particularly poor (WHO Regional Office for Africa 2001). WHO had used UN Population Division estimates at times, and the sources and methods underlying them were seen to be unclear (WHO Regional Office for Europe 2001; McKee 2001a).

3. WHO responses and proposals

Noting that there are large variations in DALE for any given level of LE, the WHO Secretariat argued that DALE does indeed provide additional information to that contained in LE. It proposed to SPRG that it should continue to use SMPH to measure and monitor population health. In doing this, it was important to be clear that the question of measuring and monitoring population health was not the same as the question of resource allocation. The criticism that DALYs should not be used for resource allocation was not relevant to this debate – as this was not being proposed. To help policy makers identify the possible causes of changes in health outcomes, WHO proposes to continue publishing the components of DALE separately – i.e., mortality and non-fatal health outcomes. SMPH is a complement to, but not a substitute for, information on the separate components.

In recognition of the problems associated with the term “disability”, and the fact that health is a multidimensional concept, WHO proposes to accept the advice that the name of the indicator should be changed from DALE to health-adjusted life expectancy (HALE).

To respond to criticisms related to health valuation a more precise definition of its conceptual basis was provided. Part of the WHO Multi-Country Survey Study 2000-2001 involved detailed questionnaires in 12 countries designed to

explore if people from different cultures rated the domains of health differently. WHO used these results to develop a method for estimating new health-state valuations (Salomon et al. 2002). The Secretariat proposes to apply it to the data from the World Health Survey (WHS): a global average valuation function will be applied to the individual domain levels estimated using the HOPIT model (Section XIII) in order to derive severity-adjusted prevalences of health states by age and sex for each survey country. At present, the prior estimates of severity-weighted prevalences derived from the GBD study use the disability weights from GBD 1990, together with weights from the Dutch disability weights study (Stouthard et al. 1997). WHO plans to revise all disability weights used in the GBD study from the population-based valuations that are obtained from WHS.

The question of timing is taken up again in Section XIV on 'Efficiency' in the SPRG report. To complement the prevalence-HALE that is already reported routinely, WHO proposes to explore the feasibility of developing an incidence-HALE based on current incidence and transition rates and information on current exposures to major risk factors. It would then be determined largely by actions undertaken in the current time period.

WHO has undertaken intense efforts to obtain more and better data. This started with consultations between WHO and Member States to verify the best sources of recent data on vital registration and causes of death. The number of countries with relatively complete vital registration or cause-of-death data has increased from 80 in 2000 to 110 in 2002. New life tables for the year 2000 have been constructed for all 191 Member States using these data. A modified logit life table model was developed for countries with incomplete registration or survey data. It employed a much larger empirical database of observed life tables than any previous model life table system, and has resulted in much better estimates of mortality at older ages. Separate estimates of HIV mortality were made for countries with high HIV mortality.

In addition to methods development for life tables, WHO has introduced ways of taking co-morbidity into account in estimating HALE. This was facilitated partly by the Multi-Country Survey Study, which included instruments and analytical tools for improving cross-population comparability of survey data. Comparable data on the prevalence of non-fatal conditions from 63 surveys in 55 countries were used to estimate HALE for WHR 2001. (The new statistical methods to establish cross-population comparability are discussed in Section XIII.) The other components of the calculations were:

- (a) Direct estimates of prevalence for major disease and injury sequelae.
- (b) Country-level prevalence data for selected conditions.
- (c) Regional information, specific epidemiological studies, and available country information on cause-specific mortality to estimate morbidity in countries with poor information about causes.
- (d) Adjustment by known under-registration for highly stigmatized causes of morbidity and mortality such as abortion, HIV/AIDS, and suicide.

- (e) For estimating health-state prevalences, data from the Multi-Country Survey Study were used (cross-population comparable prevalences, and valuations based on population preferences) together with severity-weighted prevalences derived from epidemiological analyses in GBD 2000. In addition, improved Bayesian methods were used to compute posterior health-state prevalences that combine GBD 2000-based 'prior' estimates with prevalence estimates from the Multi-Country Survey Study. For those countries with no survey results, a relationship between posterior and prior estimates of prevalences for the survey countries was used to update the priors.

Finally, improved methods for uncertainty analysis were used, including more explicit and comprehensive treatment of uncertainty in various inputs. The uncertainty interval of 80% used in WHR 2000 was increased to 95% in WHR 2001. WHO proposes to continue calculating and reporting uncertainty intervals in a systematic manner so that different users can make their own assessment of the estimates.

4. SPRG comments and recommendations

- (i) WHO is playing a leading role in the development of new concepts and health measures that incorporate non-fatal outcomes into SMPH. Considering the complexity of the issues, it is natural that there will be debate about these innovations – and some policy makers will prefer to use indicators of individual components of health rather than summary measures. Moreover, SMPH are sometimes seen as having less validity than the single component measures, especially for Member States where both morbidity and mortality estimates have wide uncertainty intervals. WHO should continue to emphasize that SMPH complement rather than compete with the disaggregations of the component parts, and it should continue to take steps to make more detailed disaggregations of SMPH available.
- (ii) SMPH require valuation of health outcomes to allow non-fatal conditions to be combined with mortality. WHO should take additional steps to explain and clarify the concept of health-adjusted life expectancy. This should be distinguished from the complexity of the methods needed for estimation where appropriate data are not available, and from the issue of cross-population comparability.
- (iii) Despite these difficulties, WHO should continue to improve the conceptual and technical aspects of health measurement, engage in external debate and consultation, and obtain better data.

- (iv) SPRG recommends that WHO take steps to strengthen local capacity to build and use these measures, particularly in developing countries. Related to this, SPRG believes that it would be valuable for WHO to establish a permanent forum for discussion of conceptual and methodological aspects of health measurement, and promote the participation of academics, policy makers and civil society – especially from developing countries. As part of this process, there should be a continuing dialogue with social scientists from subject areas such as ethics, anthropology and sociology, so as to take into account insights from these disciplines on the 'value' of health.
- (v) The modified logit life tables provide a reasonable methodology for countries where vital registration data are not available, but the assumptions behind their construction and use should be made more comprehensible for non-expert audiences.
- (vi) Vital statistics registration (VSR) systems are complex and expensive, and do not exist in many developing countries. WHO should encourage the establishment of these registries and provide the necessary technical assistance. Considering the inevitable time lags to establish a functioning VSR system, the use of indirect methods is acceptable as an intermediate solution.
- (vii) In relation to WHS, SPRG believes it is important to increase the number of participating countries, especially those with inadequate health-information systems. The face validity of the WHS data is still an issue. Although the inclusion of vignettes in the questionnaire facilitates the comparability of self-report data between countries, further development and testing of the methods is recommended.
- (viii) Data on adult mortality are still scarce. The WHO Multi-Country Survey Study 2000-2001 found that questions on deaths in households provided some useful information, but that there was underreporting of deaths. An expanded module on adult mortality should be included in WHS and validated in countries with good vital registration data. Improved methods should be developed to maximize the usefulness of this information for estimation of adult mortality.
- (ix) It is important that WHO clarifies the methods and procedures used to estimate causes of death by age and sex for countries without vital registration data or with only partial data, and that it intensifies data collection efforts in such countries.
- (x) HALE incorporates prevalences and valuations of health states from population surveys and from GBD 2000. Currently, the weights used in the GBD 2000 study are predominantly based on the GBD 1990 weights with some additional weights from a Dutch study (Stouthard et al. 1997). Examination of GBD 1990 and Dutch weights (Mathers et al.

1999) suggest that these weights are comparable. SPRG welcomes the effort made by WHO to improve the health-state valuation methods and endorses the proposal to revise the GBD disability weights using valuations derived from the forthcoming WHS.

- (xi) The difference between the uncertainty analysis proposed by WHO and statistical confidence intervals should be made clear in WHO publications.
- (xii) National simulations based on regional or global estimates can be a good starting point to encourage National Burden of Disease studies.

5. References

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REPORT OF SPRG ON HSPA

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