



The Global Burden of Disease 2000 in Aging Populations

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in Aging Populations” (PO1-AG17625). The purpose of the grant is to strengthen the methodological and empirical bases for undertaking comparative assessments of health problems, their determinants and consequences, with a particular emphasis on older ages.

This publication is published 3 times a year by the Burden of Disease Unit, part of the Harvard Center of Population and Development Studies. The BDU coordinates the efforts of the program’s researchers world wide and in partnership with the World Health Organization works to strengthen the methodology, data collection, scientific basis, reporting and policy implications of the Global Burden of Disease Study 2000.

Each newsletter will explore the particulars of specific topics studied under this grant. In this issue, we present a recently published paper: *Selected major risk factors and global and regional burden of disease* to help illustrate the methodologies and strategies that can be applied to generate the best possible estimates of the Global Burden of Disease 2000.

Additionally, an update on anchoring vignettes research (originally published in the May 2002 issue), a new supplemental research on improved epidemiological models of HIV/AIDS, and project updates are discussed.

The objective of the Global Burden of Disease Project is to strengthen the methods and empirical basis for assessing the magnitude and consequences of fatal and non-fatal health problems.

We welcome your participation in the ongoing dialogue concerning these topics. Additional information regarding the program grant can be found at <http://www.hsph.harvard.edu/burdenofdisease/> and at <http://www.hsph.harvard.edu/organizations/bdu/>.

Great Health Gains from Reducing Major Risk Factors

Majid Ezzati, from Resources for the Future and a group of researchers from the Burden of Disease Unit at Harvard School of Public Health, the World Health Organization, and the University of Auckland recently released the results of a 30-month study which estimates the burden of disease attributable to 26 selected major risk factors, globally and in different regions. The study, known as the Comparative Risk Assessment project is a component of the Global Burden of Disease study and involved a comprehensive review of literature and data for each of the chosen major risk factors. The data was analyzed by age, gender, and epidemiological regions and required the efforts of over 100 researchers around the world.

In addition to a comprehensive review of existing data, the study sought to provide a consistent baseline for measuring the burden of disease due to risk factors.

The approach used in this project, known as counterfactual analysis, measures the comparative effects of current exposure to risk factors against some alternative hypothetical exposure distributions (the counterfactual). An important contribution of this work was an attempt to choose a consistent counterfactual for different physiological, behavioral, and environmental risk factors at various layers of causality. This counterfactual, known as the theoretical-minimum-risk exposure distribution, is the state that would result in the lowest population risk, irrespective of whether currently attainable in practice. Using theoretical minimum exposure gains distribution as the counterfactual has the advantage of providing a vision of potential in population health by risk reduction from all levels of sub-optimal exposure in a consistent way across risk factors.

(continued on page 2)

Improving comparability of health surveys across time and cultures: a new “anchoring vignette” approach

Last fall, the Center’s Burden of Disease Unit brought together a group of researchers from universities across the country conducting longitudinal health studies to further develop conceptual and practical methods for using a novel “anchoring vignette” approach to health surveys.

Longitudinal studies on the health of

aging populations need measurements that are comparable across individuals and over time. Problems of comparability arise when different survey respondents attach different meanings to the questions and response choices they are offered. For example, a 90-year-old man who takes 5 minutes to get out of bed and cannot walk

(continued on page 2)



Improving comparability: A “new” vignettes approach (con’t from p.1)

up a flight of stairs might report no or only mild difficulty in “moving around,” because he is doing better than expected and better than others of the same age, while a 20-year-old woman who has some ankle pain from playing tennis reports moderate or severe problems. These answers make perfect sense in the context of each individual, but they are not comparable and therefore can produce dramatically misleading conclusions.

Researchers at Harvard and WHO, through a grant from the National Institute on Aging, have developed a new set of survey tools and statistical models to address these problems of comparability through the use of *anchoring vignettes*. In the new approach, respondents rate short hypothetical vignettes, or scenarios, describing different severity levels of health and their own health using the same questions and response categories. By relating individuals’ self-described health to the way they describe the vignettes, it is possible to translate responses from different individuals to a scale that is comparable across different population groups and over time.

The anchoring vignette strategy has been incorporated by the World Health Organization in a multi-country survey program in 61 countries conducted during 2000-2001, and in the World Health Survey that is currently underway in 73 countries. In these surveys, vignettes are applied to multiple domains of health (for example, mobility, affect, cognition, vision), as well as to other concepts that present similar challenges of comparability, including health system responsiveness and social capital. Preliminary results suggest that more accurate assessments of actual levels of health can be made through the use of vignettes.

These results have generated great interest in developing

practical ways to integrate vignettes into health surveys across the globe, and this fall’s meeting at the Center offered researchers and policy makers a chance to guide the development of anchoring vignettes into a widely-applicable research tool. The discussions focused on clarifying the methodological and conceptual underpinnings of using anchoring vignettes in health survey research and the possible future directions for applications of vignettes. As a low cost and reliable method of collecting comparable data, vignettes can help to provide policy makers, funders and health professionals a way to improve the measurement of performance on vital goals of health systems to allow meaningful comparisons across different settings and monitoring of progress over time.

During the meeting, lead researchers from the Health and Retirement Study, Wisconsin Longitudinal Study, National Long Term Care Survey and Integrated Family Survey in India presented key study objectives, results, and how anchoring vignettes might contribute to improving comparability in their work. In addition, the meeting offered the opportunity to highlight priority areas for future research, particularly on developing specific vignettes that are appropriate in diverse cultural settings, experimentation with the use of multi-media or visual aids, cross-validation of the vignette answers with measured performance tests, and the relevance of age and sex in determining comparisons between vignette ratings and self-reported health.

The use of vignettes in survey research holds the promise of greatly improve the comparability of health measurements in different settings and over time, and additional research and an interdisciplinary approach will further enhance its value.

Population Center News and Seminars

The Burden of Disease Unit, housed at the Harvard Center for Population and Development Studies, often co-host events publicizing the work of the BDU and the interdisciplinary nature of the Center. At the Center’s seminar series, Christopher Murray was recently spoke on “The Political Economy of the Health Transition” and outlined ten global health trends and the role political economy played and will continue to play in health services and outcomes. David Cutler, a researcher and project leader for the Self-reported health measures project, was also highlighted in the series this fall. Dr. Cutler presented on “The Role of Public Health Improvements in Health Advances: The 20th Century United States.”

Additionally members of the Burden of Disease Unit participate in the Center’s weekly Journal Club and Brown Bag series, further promoting the collaborative and interdisciplinary work of both the Center and the BDU and bringing the methodology and knowledge developed in the Global Burden of Disease Projects to a broader population of health researchers, students, and the interested public.

The Burden of...

MAJOR DEPRESSION

The public health burden of major depression is likely the most underestimated of any disease. The Global Burden of Disease 2000 study found that when both mortality and disability are considered, major depression is the second leading cause of healthy life years lost in the developed world and the fourth leading cause in the developing world, causing between 5% and 6% of loss globally. Over 80% of healthy years lost occur between the ages of 15 to 44, and women lose almost twice the number of healthy years to depression that men seem to.



NIH awards funds for new model of HIV prevalence and burden

IN 1996, when the Burden of Disease Unit published the Global Burden of Disease Study with the World Health Organization and World Bank, HIV/AIDS was estimated to be the thirtieth leading cause of death worldwide in the year 1990, although projections warned of a dramatic jump to ninth by 2020. So far, as dire as these forecasts were, the medium-term projections of 1.3 million deaths by the year 2000 appear to have been far too conservative. Latest estimates of mortality from AIDS place the annual number of deaths at around 3 million and rising. Methods for estimating the health impact of HIV/AIDS in areas that are hardest hit by the epidemics, however, remain imperfect and rely largely on data regarding the prevalence of HIV infection among pregnant women attending birth clinics. As the international community scales up its response to the HIV/AIDS pandemic, better models are needed

to provide reliable estimates of the extent and consequences of HIV infection in order to monitor progress and plan an effective health policy response.

In recognition of this need, the National Institutes of Health has recently awarded the Burden of Disease Unit supplemental funds to create more robust epidemiologic models of HIV/AIDS globally and by country. Over the next three years, the Unit will develop new models using all available data, with new adjustments to account for improving diagnostic technologies over time, epidemiologic variation across test sites, and important demographic factors that are not currently incorporated in official country estimates. The new models will contribute to more valid estimates of HIV incidence, prevalence and mortality, including projections of future trends. The project will also develop statistical tools and easy-to-

use software applications to allow the process to be replicated by other researchers as new analyses are required or new data become available.

This award will add considerable value to the ongoing work of the Global Burden of Disease project, particularly by improving the estimation of adult mortality and causes of death. Additionally, it builds on the project's objective to estimate not only mortality but also disability and morbidity. The more detailed models that will be developed under this award will provide better estimates of the current HIV/AIDS disease burden and more accurate forecasts of future burden. It will also provide policy makers with critical information needed to assess and compare the potential benefits of alternative interventions as they develop strategic plans for prevention and treatment of HIV and AIDS.

Great Health Gains from Reducing Major Risk Factors (con't from page 1)

The study, which has been recognized for both its methodological innovation and for breaking new ground in its empirical analysis of these risk factors, provides a detailed picture of how risk factors contribute to ill health in different regions of the world, and the results highlight the dynamic and evolving nature of our knowledge of risk factor effects from previous studies. In developed countries, tobacco, high blood pressure, alcohol, high cholesterol, and high body mass index contribute most to the burden of disease, while in developing countries, the disease burden is caused by mal- and under-nutrition, unsafe sex, unsafe water, poor sanitation, and indoor smoke from solid fuel use. The study found that the public health gains to be made from reductions in the major risk factors globally have often been underestimated in the past, as either the widespread nature of exposure was overlooked (e.g. alcohol, tobacco, indoor smoke from solid fuels, or zinc deficiency) or because the hazards had been underestimated (e.g. high blood pressure or cholesterol). The study suggests that a relatively few number of risk factors contribute a significant proportion of disease burden in all regions of the world and thus impressive gains could be made in improving health world-wide if reductions can be made. Future research in this area will attempt to discern the true magnitude of these risk factors by considering the interactions of risk factors and their possible joint effects. In better understanding the causes of healthy life loss, policy makers can better appreciate the need for action to reduce exposure to particular risk factors and significant public health gains at the population level may be made with appropriately targeted preventions and a relatively small investment.



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Project News

Non-Communicable Disease Mortality Transitions: Project 2

Alan Lopez, the Project Leader overseeing cause of death research in conjunction with site leaders Philip Setel in Tanzania and Yang Gonghuan in China, will be moving this January from World Health Organization to the University of Queensland, Australia. Dr. Lopez will continue work at Queensland, analyzing secondary data from vital registration over the past 100 years in 12 counties to ascertain probable trends in major non-communicable diseases and to better describe the mortality transition.

Adapting Statistical Methods for Public Health Research: Project 3

Gary King, the Project Leader heading the efforts to develop improved models and forecasting methods for specific causes of death and overall mortality, recently announced that the program will result in a book, tentatively titled, *Demographic Forecasting*, being co-authored by Federico Girosi. Dr. King has developed new diagnostics and tests, extending to both non-parametric and parametric methods, for evaluating vignettes and interpreting the given results. Recently, Dr. King has also developed Anchors, software that implements Chopit and several new diagnostics

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