

**Estimating
National Burden of Disease**
The burden of disease in Andhra Pradesh 1990s

Prasanta Mahapatra

**Institute of Health Systems
Hyderabad**

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Dedicated to the memory of

Late Shri Sarat Chandra Mahapatra

A good teacher, engineer, and banker. But above all, he was a great brother!

Preface

In 1991 I went to the Harvard School of Public Health to pursue my interests in measurement of hospital performance. Around December, 1991 Dr. Peter Berman, then my research advisor, introduced me to Dr. Christopher J.L. Murray. Chris was about to begin work on the Global Burden of Disease Study for the World Development Report 1993, and I was looking for some work to supplement my stipend. I started working on methods of checking the consistency of epidemiological estimates, which contributed to development of the DISMOD incidence prevalence model. In the process I got more involved in the Global Burden of Disease methodology. Professor Christopher Murray's scholarship, tenacity and his attitude of perceiving problems afresh from the grassroot level impressed me. As a civil servant, I have always been interested in the effective implementation of state policy towards improving public health, back home in Andhra Pradesh, India. No wonder then, that the potential of burden of disease estimates in aiding the dissemination of public policy attracted me. After returning to Andhra Pradesh, I started National Burden of Disease study in 1993 to estimate the burden of disease in Andhra Pradesh. I soon discovered two important constraints. Firstly, I did not understand the mathematics, demography and economic theory that led up to the formulation of the DALY measure and discussions about its possible usage. Secondly, after collecting available material for about a year, I found that the database for estimation of disease burden simply did not exist in Andhra Pradesh. The state did not have enough information on causes of death that was required in order to estimate disease burden. Descriptive epidemiological information about incidence and prevalence of diseases was scarce.

I had already become considerably involved in the project to abandon it midway and return to my position in the Civil Service. Consequently, I set out to improve my analytical skills, and joined the doctoral program in Harvard School of Public Health in 1994, with Professor Christopher Murray as the advisor. In 1997 I returned to Andhra Pradesh and pursued the collection of data on causes of death, health state valuation etc. Improvement of vital statistics being an ongoing process I have updated and expanded the scope of my project with further studies on the causes of death, general mortality statistics, etc. Here I present insights about National Burden of Disease studies gained through the course of the study, as well as a set of disease burden estimates for Andhra Pradesh. I believe that burden of disease estimate for countries and states can be useful tools for policy, only if they are rooted in reliable and accurate vital statistics, local measurements of epidemiological profile and health state valuation. This is the fundamental argument of the work presented here. The term National Burden of Disease (NBD) is used here in a generic sense to mean local burden of disease estimates for national and sub national entities.

A large part of the work presented here is taken straight from my thesis titled "Estimating national burden of disease: sensitivity to local data". Chapters four and five of this book deal with descriptive epidemiology inputs for disease burden estimates. A major handicap is the general absence of descriptive epidemiological studies in India. Building up descriptive epidemiology of the many diseases included in a standard burden of disease cause list, in such an environment is a long drawn out process. It can happen only if there is a National movement to build up the required capacity and a network of scientists, and epidemiologists collaborate by generating required original data. Quite naturally, this was beyond me to make much progress. So I could not generate disease specific estimates any more informative than the India estimates available in the Global Burden of Disease study by Christopher Murray and Alan Lopez. Actually, I was involved by assisting Chris Murray in coordination with various National and International experts who contributed to those estimates. Since I could not bring in more accurate local data, I decided to adopt the GBD epidemiological estimates for India as such. However, by now, I had worked on describing the process of generating epidemiological estimates for disease burden estimates. These write ups, presented in Chapter Four, were developed to elaborate on the concept and the steps to disease specific epidemiologists. Myself and Dr. GNV Ramana, who was my collaborator in early phases of the AP Burden of Disease study developed an estimate of tuberculosis incidence in Andhra Pradesh, using locally available data. Our objective was to take select one disease for which the local data base is better and then illustrate how descriptive epidemiology estimates can proceed for a NBD study. Chapter Five is the result of this exercise. In Chapter - 8 I present yet another cut of the age weighting and discounting issue. This chapter is mainly to further simplify discussion about age weighting and discounting.

I owe my gratitude to a lot of people who have helped me in pursuing this project over the last seven years. First, I am grateful to Professor Christopher J.L. Murray who has been a wonderful teacher. He has stimulated, challenged and guided the process of my intellectual development right from the beginning of our association in 1992. I am grateful to all members of the Research Advisory Committee, Professors William C. Hsiao, Michael R. Reich, Allan G. Hill, and Sudhir Anand, who have all helped me retain the focus of the project.

I am grateful to all colleagues, past and present, at the Harvard Burden of Disease Unit, for sharing in all the triumphs and tribulations that go hand in hand in a high-performance environment. Catherine Michaud, Kenji Shibuya, Robert Ashley, and Josh A. Salomon have been especially helpful in pursuing the intellectual debates about estimation of burden of disease and its usage. I thank Dr. G.N.V Ramana, erstwhile colleague at the Administrative Staff College of India for his assistance in the collection of data and initial analyses for the AP Burden of Disease Study. I thank my current colleagues at the Institute of Health Systems, Hyderabad, who have collaborated on various sections of this work.

Dr. P.V. Chalapati Rao is my collaborator for the cause of death studies. Josh A. Salomon (BDU and WHO), Mrs. Lipika Nanda and KT Rajashree are my collaborators for the health state valuation study. I have cited them as my coauthors where ever appropriate. Drs. Satish Kumar, Sai Kumar and Pratap Sisodia, currently faculties at the Institute of Health System have helped in reviewing and editing Chapters Five, Four and Eight respectively.

I thank the Govt. of Andhra Pradesh, Directorate of Health Vital Statistics Division and other authorities of the Health Department of Govt. of Andhra Pradesh for their support especially in sharing of cause of death reports. I thank the residents of Kondakkal village, who were so generous in giving their time for the health state valuation study. I am grateful to Professor Shanta Sinha and the M. V. Foundation for their help in identifying the Kondakkal village, and introducing me and my colleagues to the local leaders.

I am grateful to the WHO - TDR for the financial support that enabled me to pursue the Ph.D. course at Harvard and do parts of the field work. Additional funding came again from WHO through the Global Program on Evidence and Information for Policy, and the World Bank. I am grateful to Dean T. Jamison for his support and encouragement. I appreciate the grant of study leave by Govt. of Andhra Pradesh that enabled me to pursue the Ph.D. course and this work.

At this point in life I remember my father Late Shri Sachidananda Mahapatra who shaped my world view. I remember my mother Smt. Haramani Devi, whose love and care I always cherish. My wife Lipika Nanda, and daughter Lisa have been very supportive throughout. Lisa had to change schools many times to accommodate my interests. Without the support of these three wonderful women in my life, I would not have been able to pursue this work for so long.

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Prasanta Mahapatra

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