

Understanding the Burden of Disease in Nepal: a Call for Local Evidence

Devleesschauwer B,^{1,2} Ale A,³ Duchateau L,⁴ Dorny P,^{2,5} Lake R,⁶ Dhakal P,⁷ Pun SB,⁸ Pandey BD,⁹ Speybroeck N¹

¹Institute of Health and Society (IRSS), Faculty of Public Health, Universite catholique de Louvain, Brussels, Belgium, ²Department of Virology, Parasitology and Immunology, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium, ³National Zoonoses and Food Hygiene Research Centre, Kathmandu, Nepal, ⁴Department of Comparative Physiology and Biometrics, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium, ⁵Department of Biomedical Sciences, Institute of Tropical Medicine, Antwerp, Belgium, ⁶Food Safety Programme, Institute of Environmental Science and Research (ESR) Ltd., Christchurch, New Zealand, ⁷Nepal Health Research Council, Kathmandu, Nepal, ⁸Clinical Research Unit, Sukraraj Tropical and Infectious Disease Hospital, Kathmandu, Nepal, ⁹Everest International Clinic and Research Center, Kathmandu, Nepal.

ABSTRACT

The burden of disease, most commonly expressed in terms of Disability-Adjusted Life Years, has become a crucial component in decision making processes within the health sector. In Nepal, however, burden of disease estimates are scarce and lack representativeness. To improve our understanding of the burden of disease in Nepal and thereby increase the efficiency of health policies, there is an urgent need to strengthen the local evidence based. All relevant stakeholders should therefore collaborate to generate new data, improve existing data generation mechanisms, make generated data available, and optimize the use of available data.

Keywords: burden of disease; disability-adjusted life years; local evidence; nepal

INTRODUCTION

The quantification of population health plays an important role in decision making processes within the health sector. Burden of disease is a measure of the gap between current health status and an ideal situation where everyone lives into old age free from disease and disability. Supported by the World Bank and the World Health Organization (WHO), the *Disability-Adjusted Life Year* or DALY has emerged as the most important disease burden metric, combining life years lived in less-than-perfect health and life years lost due to mortality.^{1,2} By expressing the burden of disease as a single metric, comparing the relative impact of different diseases is facilitated, as well as the relative burden suffered by different population subgroups. Consequently, diseases and subpopulations that deserve the highest attention can be identified.

Burden of Disease in Nepal

The importance of burden of disease estimates for the health policy-making process in Nepal becomes evident from recent policy documents and recommendations. A comprehensive and strategic approach towards public health is a relatively recent phenomenon in Nepal. The first National Health Policy (NHP) was adopted in 1991,³ and served as a policy framework to guide the development of the health sector. The NHP was mainly focused on increasing the health status of the rural population. To this end, it included directives to establish health facilities at the Village Development Committee level and to implement decentralization throughout the health sector. Based on the NHP, the Second Long-Term Health Plan (1997-2017; SLTHP)⁴ was drafted, which was the first document to recognize the importance of prioritizing health sector needs, motivated

Correspondence: Brecht Devleesschauwer, Faculty of Veterinary Medicine, Ghent University, Faculty of Public Health, Universite Catholique de Louvain, Salisburylaan 133, 9820 Merelbeke, Belgium. Email: Brecht.Devleesschauwer@UGent.be, Phone: +32476365743.

by the scarce human, financial and physical resources available. In parallel with the development of the SLTHP during the late 90s, a comprehensive analysis of health care delivery in Nepal was conducted by the World Bank, and in 2000 the results were presented in a report entitled *Operational Issues and Prioritization of Resources in the Health Sector*.⁵ Based on a situation analysis, the report makes several recommendations for the further development of the Nepalese health sector, one of which was the establishment of priorities: "Because Nepal lacks the institutional or financial capacity to do everything that needs to be done immediately, health system initiatives and interventions will need to be phased in. [...] Sequenced priority interventions that have the strongest impact on health status need to be planned and given the management attention and financial resources necessary for their successful implementation." These recommendations were carried forward in the development of the Nepal Health Sector Programmes (NHSP), short-term strategic frameworks for the further development of the health sector. Within these programmes, disease burden is recognized as one of the bases for setting programme priorities. The second NHSP Implementation Plan (2010-2015)⁶ states, for example, that the "introduction of new and under-used vaccines will be prioritised based on disease burden, financial sustainability and infrastructure".

But where is the evidence?

Notwithstanding the importance of burden of disease estimates, Nepalese DALY estimates are very scarce. The first national burden of disease study was conducted by the World Bank in the 90s, and its results appeared as an annex to the aforementioned situation analysis report.⁵ This study used mortality data from the United Mission to Nepal hospitals and morbidity data from WHO community-based studies and national vector-borne disease control programmes. Data on non-communicable diseases (NCDs) were extrapolated from NCD burden of disease estimates for rural India. The study estimated a national burden of disease for 1996 of 363 DALYs per 1000 population. The proportion of total DALYs due to communicable, maternal/perinatal and nutritional condition was 68.5%. Non-communicable and congenital diseases accounted for 22.8% of the burden, injuries and violence for the remaining 8.7%. Based on a decreasing fertility rate, the study team projected the national burden to decrease to 245 DALYs per 1000 in 2011. The proportions of the different disease categories were projected to evolve to 61.4%, 28.6% and 10.0%, respectively, implying that the group of communicable diseases would remain the dominant source of disease burden.

A second source of disease burden estimates for Nepal is the first update of the WHO Global Burden of Disease

study.⁷ This study estimated an overall age-standardized disease burden of 308 DALYs per 1000 in 2004, in line with the World Bank projections. In contrast to the World Bank estimates, however, the majority of the burden was attributed to non-communicable and congenital diseases (48.5%), followed by communicable, maternal/perinatal and nutritional conditions (39.9%) and injuries and violence (11.6%). An important difference between the World Bank and WHO studies is that the former was largely based on local data, whereas the latter was mainly based on regional extrapolations. Except for tuberculosis, malaria, HIV/AIDS and childhood-cluster diseases, the WHO study reported low levels of evidence on mortality and morbidity for all other considered diseases and disabilities. The cause-of-death distribution patterns of India and the Philippines were therefore used as proxy for that of Nepal. Although Nepal is in certain aspects comparable to these countries, most notably India, it is questionable to what extent their health situations are similar. Such extrapolations must therefore be treated with caution. It is for instance not clear whether or not Nepal is undergoing its demographic and epidemiological transition at the same pace as India. A possible policy shift from communicable to non-communicable diseases based on these estimates⁸, should therefore be evaluated with utmost care.

Indeed, the WHO Global Burden of Disease 2004 results seem to be refuted by the third and most recent source of DALY estimates for Nepal, the comprehensive Global Burden of Disease 2010 study.^{12,9} This study concludes that between 1990 and 2010, the importance of communicable diseases has decreased in favour of NCDs, but that even today lower respiratory infections, diarrheal diseases, and neonatal encephalopathy (due to birth asphyxia or trauma) are still the leading causes of healthy life years lost in Nepal. However, as GBD2010 does not provide its raw data, it remains unclear to what extent these conclusions were based on local data.

A call for local evidence

It is clear that local and reliable evidence on the burden of disease in Nepal is of great importance in setting healthcare priorities and monitoring health trends. In this respect, it is laudable that national burden of disease studies have recently been initiated by the Nepal Health Research Council, with the support of the Ministry of Health and Population.^{10,11} A first *Assessment of Burden of Diseases in Nepal* project was initiated in 2007, and was based on a nation-wide sample of primary mortality data collected through the *Motherhood Method*,¹² and complemented with secondary morbidity data. The project is reported to be completed, but results have not yet been made available. In 2009, a second *Assessment of Burden of Diseases in Nepal* project was

launched, focusing on the Central Development Region of Nepal. The main aim of the study is to obtain mortality and cause-of-death estimates through verbal autopsy questionnaires. This project is currently reported to be nearing completion.

Notwithstanding these current efforts, there are still huge knowledge gaps with regards to Nepal's health status. More and better local information is therefore urgently needed. This can and should be achieved at the different levels of the data generation process:

There should be an increased focus on basic epidemiological research in Nepal. Investments in national community-based surveys and longitudinal studies would generate new evidence bases upon which future policies can be drafted. Nepal is currently participating in Demographic and Health Surveys,^[13] but these surveys only cover a fraction of the entire health spectrum, and are mainly focused on child and maternal health.

Existing data generation mechanisms should be further strengthened. In this respect, the efforts to improve the Health Management Information System,^[14,15] the official hospital-based surveillance system of Nepal, should continue to be actively encouraged and supported. Capacity strengthening at all levels of the decentralized data collection system will need to be an important part of these efforts.

Existing data should be made publicly available and integrated. The health system in Nepal is multi-sectorial, with major contributions by private and NGO providers, in addition to the government. As a result, various government agencies, development partners, I/NGOs, local and international academia are actively collecting data, but these are not always made available to the general public. Difficulties in obtaining health statistics from the private sector has been recognized as an important factor limiting the evidence base in Nepal.^[16] With regards to academic research, improved digital thesis libraries could help to disseminate the information produced by the various Bachelor, Master and PhD students in Nepal.

Available data should be used in the most optimal way. Local capacity for transforming the available data into policy-relevant information, such as DALYs, should therefore be further strengthened. There are a number of international projects which can assist in the translation of incidence data into burden of disease estimates and provide context. These include the *Global Burden of Disease 2010 Study*, which performed a comprehensive and consistent revision of disability weights, a fundamental input into DALY calculations.

^[17] Global and regional estimates of the incidence and burden of disease by WHO initiated *Epidemiology Reference Groups* for children (CHERG) and foodborne hazards (FERG) can provide issue specific information.^[18]

THE WAY FORWARD

By strengthening the local evidence base, we can continually improve our understanding of the burden of disease in Nepal. By effectively translating this evidence into policy, we may furthermore assure that this burden can be addressed in the most efficient way. All stakeholders, including policy makers, development partners, researchers and public health workers, should therefore join forces to accomplish these goals.

REFERENCES

1. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ. *Global Burden of Disease and Risk Factors*. New York: World Bank/Oxford University Press; 2006.
2. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. (2012) Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2013; 380(9859):2197–223.
3. Ministry of Health and Population, Nepal. *National Health Policy, 1991* [Online]. [cited 2013 May 21]. Available from: URL:http://mohp.gov.np/english/publication/national_health_policy_1991.php
4. Ministry of Health and Population, Nepal. *Second Long-Term Health Plan, 1997-2017* [Online]. [cited 2013 May 21]. Available from: URL:http://mohp.gov.np/english/publication/second_long_term_health_plan_1997_2017.php
5. World Bank. *Nepal, Operational Issues and Prioritization of Resources in the Health Sector*. Kathmandu: World Bank; 2000.
6. Ministry of Health and Population, Nepal. *Nepal Health Sector Programme – Implementation Plan (NHSP-IP 2) 2010-2015*.
7. World Health Organization. *The Global Burden of Disease: 2004 Update*. Geneva, Switzerland: WHO; 2008.
8. Institute for Health Metrics and Evaluation, University of Washington, USA. *GBD profile: Nepal* [Online]. [cited 2013 May 21]. Available from: URL:<http://www.healthmetricsandevaluation.org/sites/default/files/country-profiles/GBD%20Country%20Report%20-%20Nepal.pdf>
9. Engelgau MM, El-Saharty S, Kudesia P, Rajan V, Rosenhouse S, Okamoto K. *Capitalizing on the Demographic Transition: Tackling Noncommunicable Diseases in South Asia*. Washington, DC: World Bank; 2011.
10. Nepal Health Research Council. *Annual Report: Fiscal Year 2064/65 (17 July 2007 – 15 July 2008)*. Kathmandu: NHRC; 2009.

11. Nepal Health Research Council. Annual Report: Fiscal Year 2067/68 (17 July 2010 – 16 July 2011). Kathmandu: NHRC; 2012.
12. Maskey MK, Baral KP, Shah R, Shrestha BD, Lang J, Rothman KJ. Field test results of the motherhood method to measure maternal mortality. *Indian J Med Res.* 2011;133:64–9.
13. Ministry of Health and Population, New ERA, ICF International Inc. Nepal Demographic and Health Survey 2011. Kathmandu;2012.
14. Trägård A, Shrestha IB. System-wide effects of Global Fund investments in Nepal. *Health Policy Plan.* 2010;25(Suppl. 1):i58–62.
15. Nepal Health Sector Support Programme. Consensus Building Workshop on Strengthening Health Management Information System (HMIS): Report Outlining Workshop Findings, Recommendations for Government & NHSSP Support. Kathmandu: NHSSP; 2011.
16. Dhillon PK, Jeemon P, Arora NK, Mathur P, Maskey M, Sukirna RD, et al. Status of epidemiology in the WHO South-East Asia region: burden of disease, determinants of health and epidemiological research, workforce and training capacity. *Int J Epidemiol.* 2012;41(3):847–60.
17. Salomon JA, Vos T, Hogan DR, Gagnon M, Naghavi M, Mokdad A, et al. Common values in assessing health outcomes from disease and injury: disability weights measurement study for the Global Burden of Disease Study 2010. *Lancet.* 2013; 380(9859):2129–43.
18. Stein C, Kuchenmüller T, Hendrickx S, Prüss-Ustün A, Wolfson L, Engels D, et al. The Global Burden of Disease assessments—WHO is responsible? *PLoS Negl Trop Dis.* 2007; 1(3):e161.