

The Global Burden of Disease 2010 update: keeping mental health in the spotlight

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Commentary on: Baxter *et al.* (2014). The global burden of mental and substance use disorders: changes in estimating burden between GBD1990 and GBD2010. *Epidemiology and Psychiatric Sciences* 23, 239–249.

Prior to the 1990 Global Burden of Disease (GBD) study (Murray & Lopez, 1996), prioritisation of health problems was unduly influenced by mortality data. Mortality rates and proportional mortality ratios, being much more readily available than other indices, exerted undue influence on priority-setting discussions. This changed with the appearance of the GBD. The GBD's Disability Adjusted Life Year (DALY) introduced a more balanced perspective by quantifying health loss with reference both to years of life lost (YLL) and years lived with disability (YLD). Ever since, mental disorders have been a lot harder to ignore. Viewed through the lens of the DALY, these conditions are seen to be among the most burdensome health conditions.

Although the 1990 study helped to bring the burden of mental illness into better focus for policy-makers, re-energised efforts were needed to maintain this focus. Fortunately, the GBD's efforts have not only continued, but also have undergone a renewal with the 2010 update (Murray *et al.* 2012). Recent GBD results continue to highlight the burden of mental and substance use disorders (7.4% of burden worldwide), but they do so with an invigorated voice. A paper in this issue provides readers of EPS with a summary of changes pertaining to the mental and substance use disorders components of the 2010 GBD (Baxter *et al.* in press). These changes include a more sophisticated quantification of the epidemiology in several respects. There are finer distinctions between different mental and substance use disorder categories, finer distinctions within those categories (e.g., mild, moderate and severe levels), a more inclusive

approach (especially for disorders typically having an onset in childhood), a meta-synthesis strategy that is less centred on incidence and more on prevalence (with notable avoidance of the problematic lifetime prevalence category), and also changes to the way in which disability weights are calculated.

Changes to the GBD's disease modelling align with current trends in psychiatric epidemiology. Earlier iterations of the GBD used a more conventional approach to incidence–prevalence–mortality modelling. Within the prior framework, prevalence was viewed as an outcome of incidence (the inflow to the prevalence pool) and mortality (the outflow from the prevalence pool). These rates of transition were represented as sets of differential equations and were modelled using the GBD software DISMOD I and DISMOD II. The general approach of understanding the epidemiology in this way is not controversial. However, some salient aspects of this framework could not be supported by a strong evidence base in the case of psychiatric disorders. Largely, this was due to the lack of prospective studies assessing incidence. Not only are there more prevalence estimates than incidence estimates available globally, but also the 'here and now' focus of prevalence has advantages for measurement.

Psychiatric epidemiology, following traditions of the DSM and ICD classification systems, has tended to view the common mental disorders as lifelong conditions having an episodic course. For example, major depressive disorder has its incidence, by definition, with an initial episode of major depression (in the absence of preceding manic or hypomanic episodes). Such an episode can be followed by relapses and remission but the disorder itself is a lifelong condition (unless it 'converts' to a bipolar disorder). In view of this perspective, lifetime prevalence has understandably been seen as a foundation of the understanding the epidemiology of these conditions. Unfortunately, the lifetime perspective has been difficult to implement in practice, especially when attempts to do so have needed to rely on retrospectively oriented assessment

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instruments such as the Composite International Diagnostic Interview (Kessler & Ustun, 2004). Prospective studies using such instruments produce estimates that exceed those evaluated retrospectively (Moffitt *et al.* 2010) and cast doubt on these measurement strategies. Also, measurement artefacts such as age-related declines in lifetime prevalence confirm that lifetime prevalence, despite the apparent preference for understanding the epidemiology in this way, has not been very successful (Patten *et al.* 2010). The GBD 2010 results are much more palatable. For example, the incidence of major depression (which can now be regarded as the incidence of major depressive episodes) was found to exceed that of prevalence, consistent with expectation since the mean duration of these episodes is <1 year (Ferrari *et al.* 2013).

Incidence estimates are fewer in number than prevalence estimates and derive from fewer geographical areas. Available estimates from studies that have attempted to implement the lifetime perspective are vulnerable to errors since they must rely on lifetime prevalence to exclude prevalent cases, an essential step in the assessment of incidence (Bijl *et al.* 2002). The 2010 GBD, fortunately, has adopted a prevalence-based approach to the assessment of burden. This has allowed it to incorporate studies using a variety of validated assessment strategies (incorporating measurement strategy into its meta-synthesis), increasing both the quality and quantity of its foundational data. DISMOD-MR focuses on the estimation of point (or brief period) prevalence using Bayesian meta-regression applied in combination with the incidence-prevalence-mortality framework. This approach has the advantage of being able to deal with uncertainty in its inputs (which can incorporate expert opinion) and to propagate this uncertainty through to its outputs. The ability to explore international differences is enhanced as a result. There is a greater ability to incorporate more diverse and more accurate data sources. The ultimate result is an approach that focuses more on the 'here and now' of disease burden.

Many of the 2010 GBD estimates derive from systematic reviews, helping to ensure data quality. The meta-regression approach to data synthesis can better reconcile available estimates, thereby better addressing geographical and methodological differences. Psychiatric epidemiology, as a scientific discipline, has arguably tended to be somewhat narrowly focused, relying on a small number of measurement strategies (such as the Composite International Diagnostic Interview) as well as a somewhat homogenised set of methodological approaches. The resulting studies have typically limited themselves to statistical estimation of classical parameters such as prevalence, odds ratios, adjusted odds ratios, etc. The more dynamic

and inclusive strategies of the 2010 GBD promise a more useful knowledge-base for quantifying disease burden. It would be of value both to the GBD and to the broader academic community; however, for the GBD's advanced methods to be more available for the use and scrutiny of the international academic community.

Another aspect of the 2010 GBD is its use of population surveys to derive its disability weights, a change from its prior use of expert committees for this purpose. It is worth noting that, even though these are called disability weights and even though these are a component of the calculation of YLD and DALYs, the weights do not measure disability in the classical sense of diminished functional ability. They are more akin to a utility or preference weight, quantifying health loss. The idea of obtaining health state preference data from the population rather than from experts makes a lot of sense. It is more questionable, however, whether a brief vignette, particularly delivered during in a telephone survey, is sufficient to capture an actual health state preference, especially for mental disorders. Also, it should be remembered that these weights reflect preferences and perception of the general population, whereas the burden of mental illness falls largely on people suffering from those illnesses. It would be valuable to better incorporate the input of people who have experienced those health states. By encouraging further work on health-state preferences, however, the GBD maps out directions for future research and more comprehensive data collection.

Health-state preferences are not the only way in which social value judgments contribute to the quantification of disease burden. The elimination of discounting and age-weighting has resulted from concerns about social equity. The 'inside the skin' emphasis of the GBD also has a bearing on the assessment of mental and substance use disorder burden. As many mental and substance use disorders have their onset early in life they affect peoples' functioning at critical times for forming relationships, initiating careers, completing education and so on. The impact of mental and substance use disorders is thereby magnified through lasting secondary effects. Such 'outside of the skin' impacts are not prominently reflected in the GBD estimates.

An aspect of the GBD that is rarely mentioned is the project's ground-breaking efforts at dissemination. Apart from high profile publications in the medical literature, GBD estimates are made widely available through interactive utilities and data visualisations at the Institute for Health Metrics and Evaluation (<http://www.healthmetricsandevaluation.org/gbd>). Since health policy decisions are often set at the national level, and policy makers cannot always get what they need from peer-reviewed papers, the ability to quickly access country-specific estimates should heighten the impact of this work.

It would perhaps be naïve to believe that the availability of increasingly sophisticated information about disease burden would necessarily lead to more rational priority setting in health policy. However, incorporating evidence into health policy is a task that will be facilitated by an ever-improving and vibrant GBD initiative. If nothing else, the GBD makes mental health issues very difficult for policy makers to ignore, which is a good thing.

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Conflict of Interest

The author participated in some aspects of the 2010 GBD and was a co-author on some publications arising from it.

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