EDITORIAL

Applying Global Burden of Diseases in Medical Toxicology

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In the past decade, high attention has been given to the Disability-Adjusted Life Year (DALY) metric. One DALY is one lost year of "healthy" life. DALYs for a disease or a health condition are measured by the sum of (a) the Years of Life Lost (YLL) because of premature death occurred in the target population and (b) the Years Lost due to Disability (YLD) for those living with that condition or its consequences. YLL corresponds to the number of deaths multiply by the standard life expectancy at the age and gender at which death occurs. YLD is estimated by multiplying the number of incidents by the average duration of the disease to a weight factor that reflects the severity of the disease (disability weight or DW). DW is reported on a scale from 0 (perfect health) to 1 (dead). The DWs could be measured by several utility measurement techniques (1).

The sum of these DALYs across a population is assumed as the burden of that disease. This is the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of that disease and disability.

In a study undertaken by the World Health Organization, it was found that poisoning in individuals was scored 0.611-0.608 while stroke for example was scored 0.920 and cretinism was scored 0.804. On the other side of the spectrum, otitis media, pharyngitis and mild upper respiratory infection were scored 0.023, 0.07 and 0.00 respectively (2). Poisoning in general, therefore, has been considered as a highly disabling condition.

Poisoning can be intentional, accidental or criminal (3). Its burden includes physical as well as mental disabilities. While the medical burden of intentional and accidental poisonings seems to be equal for similar severe cases, intentional poisoning often occurs in patients with depression or coping difficulties and may need extra psychological, familial or social attention. It has been shown that burden of suicide (including suicidal poisonings) puts it at 21st rank in the list of most important diseases. Suicide and nonfatal attempted suicide together climb the position to 11th in this ranking of diseases (4). Furthermore, adding the mental suffering from suicidal thoughts will rank suicidal behaviors among the most important diseases (4).

In poisonings, type of medication or toxic agent used, dose, route of administration, chronic use, addiction and racial differences as well as health infrastructure, pre-hospital care and availability of antidotes may affect the outcome. Unlike overdose with multivitamins, low dose oral consumption of aluminum phosphide may lead to critical condition and death. In addition, some poisonings such as opioid overdose are easily treatable due to the presence of effective antidotes. These variables may drastically change the weights in different regions.

Experts who establish disability weights from pairwise comparisons (5), ranking and person trade off methods should be extra careful in medical toxicology. Extra caution should be given in interpretation of the DW in poisonings. Accidental poisoning should also be considered independently. Perhaps, the burden of each toxic agent should be calculated and interpreted separately in different regions.

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