MERCURY USE IN ARTISANAL SMALL-SCALE GOLD MINING IN ZIMBABWE: DISABILTY-ADJUSTED LIFE YEARS (DALYS) OF CHRONIC MERCURY INTOXICATION

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Background and Aims: Artisanal small-scale gold mining (ASGM) is a poverty-driven activity in Zimbabwe and other developing countries. Mercury is used for extracting gold because it is readily available and effective. The environmental burden of disease method developed by the World Health Organization was used to estimate the impact of mercury use in ASGM on the health status of the Zimbabwean population.

Methods: Epidemiological and demographic information was collected on the Zimbabwean population (total, practicing ASGM, living in ASGM areas, chronic mercury intoxicated) through two field studies, international literature and official databases. Missing data were modeled using the software tool DisMod II. Disability-adjusted life years (DALYs) were calculated for 2004. Overestimation was avoided by estimating the lowest assumable DALY-scenario. The estimates were compared with disease burdens published in the recent *Global Burden of Disease* study.

Results: Chronic mercury intoxication attributable to the use of mercury in ASGM caused 4.24 DALYs per 1,000 inhabitants in Zimbabwe in 2004 (preliminary results), most of it attributable to male miners (65% of total DALYs). The total estimated burden of 52,932 DALYs calculated was comparable with the burden due to asthma in Zimbabwe. In Europe, the burden of road traffic accidents and hearing loss each also caused over 4 DALYs/1,000 inhabitants. Likewise comparable were cancer (except lung) in Hungary (highest country rate in the world, 4.1 DALYs), and cardiovascular diseases in Germany (3.9 DALYs), both attributable to indoors and outdoors air pollution, water, sanitation and hygiene.

Conclusions: The use of mercury in ASGM was identified as a serious public health issue. It is comparable with well-recognised international public health problems, although the lowest scenario was estimated. Interventions to reduce the burden are urgently needed. The analysis is limited by the data-scarcity. Refined analyses are currently in progress to improve the quality of the first estimates.