

ORIGINAL RESEARCH

Children's Environmental Health Indicators in Australia



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Abstract

BACKGROUND Adverse environmental exposures in early life increase the risk of chronic disease but do not attract the attention nor receive the public health priority warranted. A safe and healthy environment is essential for children's health and development, yet absent in many countries. A framework that aids in understanding the link between environmental exposures and adverse health outcomes are environmental health indicators—numerical estimates of hazards and outcomes that can be applied at a population level. The World Health Organization (WHO) has developed a set of children's environmental health indicators (CEHI) for physical injuries, insect-borne disease, diarrheal diseases, perinatal diseases, and respiratory diseases; however, uptake of steps necessary to apply these indicators across the WHO regions has been incomplete. A first indication of such uptake is the management of data required to measure CEHI.

OBJECTIVES The present study was undertaken to determine whether Australia has accurate up-to-date, publicly available, and readily accessible data on each CEHI for indigenous and nonindigenous Australian children.

FINDINGS Data were not readily accessible for many of the exposure indicators, and much of the available data were not child specific or were only available for Australia's indigenous population. Readily accessible data were available for all but one of the outcome indicators and generally for both indigenous and nonindigenous children. Although Australia regularly collects data on key national indicators of child health, development, and well-being in several domains mostly thought to be of more relevance to Australians and Australian policy makers, these differ substantially from the WHO CEHI.

CONCLUSIONS The present study suggests that the majority of these WHO exposure and outcome indicators are relevant and important for monitoring Australian children's environmental health and establishing public health interventions at a local and national level and collection of appropriate data would inform public health policy in Australia.

KEY WORDS physical injuries, insect-borne disease, diarrheal diseases, perinatal diseases, respiratory diseases

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INTRODUCTION

Recent estimates of the major contributors to the global burden of disease in both developing and developed country settings have demonstrated a swing away from communicable to noncommunicable diseases over the past decades.^{1,2} There has been a reduction in early childhood death from the traditional infectious diseases and an increase in the years lived with disability associated with chronic noncommunicable diseases.^{2,3} Adverse environmental exposures in early life increase the risk of chronic disease but do not attract the attention nor receive the public health priority warranted.⁴

A safe and healthy environment is essential for children's health and development, yet is absent in many countries.^{5,6} Children worldwide are continuously exposed to a number of environmental hazards that are known to be associated with adverse short- and long-term health outcomes.⁷ Poor health of a child places an economic burden on the country's public health care system⁸ as well as financial strain on the child's family in terms of medical expenses.⁹

Poor child health results in absences from school and reduces education standards. Parents missing work because of this reduces the productivity of a community, resulting in detrimental effects on the socioeconomic well-being of the country.^{9,10} A clear understanding of, and thus protecting children from, exposure to environmental hazards should be an important regional, country, and community goal. Although some environmental contaminants, conditions, and settings are generally recognized as being hazardous, many others are not. For example, although most would recognize that exposure to high levels of ambient air pollution are likely to have adverse health consequences, the same may not be true for exposure to the endocrine-disrupting activity of plasticizers leaching from containers into foods or beverages. A better understanding of the relationship between environmental hazards and adverse health outcomes is necessary to improve communities' resilience and response toward such hazards. A classical mechanism that helps us understand these relationships is a framework of environmental health indicators specifically for children.

The World Health Organization (WHO) developed such a framework of children's environmental health indicators (CEHI), which were aimed at improving the assessment and reporting of children's environmental health, including monitoring of the effects of environmental interventions

developed to protect and improve children's health.⁵ The WHO CEHIs were based on 5 main groups of disease and affliction that were considered by WHO as the main causes of childhood disease burden in the early 2000s, namely: perinatal, respiratory, diarrheal, and insect-borne diseases, as well as physical injuries. Each group has exposure and outcome indicators (Table 1) that can be measured at both local and national levels.^{5,11} For example, an exposure indicator for perinatal diseases is *the number of women of childbearing age who are malnourished* and an outcome indicator is *the number of children born of low birth weight*.

Widespread use of these WHO CEHI would enable comprehensive comparisons across countries and regions to allow refinement and improved resolution of each individual indicator. For instance, with no routine collection of CEHI data in a specific region or country, implementation of action and policies to improve children's environmental health in that area becomes challenging.¹¹ When the WHO, in 2003, launched the CEHI initiative with a pilot project, some countries and regions adapted, adopted, and institutionalized a number of indicators as part of regular national indicator sets. However, countries from southeast Asia and the western Pacific region, which includes Australia, did not participate.¹¹

The aim of the present study was to determine, by applying a WHO CEHI measurement approach, whether Australia has accurate up-to-date, publicly available, and readily accessible data on each CEHI for all (indigenous and nonindigenous) Australian children.

Methodology. A comprehensive systematic search of the Australian Bureau of Statistics (ABS), Australian Institute of Health and Welfare (AIHW), Australian Government websites (including state government sites), PubMed, and Google was conducted to find publicly available Australian information in particular data that correspond to WHO CEHI. Reference lists of relevant articles and reports were also examined to see if our search had overlooked any available Australian data.

RESULTS

Physical injuries (unintentional) include drowning, road traffic incidents, falls and burns, accidental poisonings, and injury by natural events such as earthquakes or storms.¹² Modifiable environmental risk factors contributing to physical injuries include: poor housing, lack of adequate and safe play space,

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