Developing best practice to protect children from air pollution in Indonesia

Project Background Information/Introduction:

Air pollution is a severe threat to children's health and wellbeing. Children exposed to particulate air pollution are predicted, throughout their life-course, to experience illness and neurodevelopmental issues with considerable risk to quality of life and earning potential. The pollutants may be particulate or gaseous and are emitted from a very diverse range of sources, including from various types of outdoor or indoor combustion. These exposures may be a daily occurrence, for example from vehicle emissions or indoor cooking, or can be sudden, catastrophic haze events caused by seasonal vegetation burning. Whilst the primary recommendation is to remove children from harm, air pollution is a pervasive hazard, especially in tropical countries where building structures and cooking methods may not facilitate effective exposure reduction, indoors. Thus, the development of best practices to limit the consequences of air pollution on children's health and wellbeing are vital. Parents/guardians may be faced with a range of untested interventions and require evidence to choose the best protection for their children.

If one cannot remove a child from the exposure, the general health advice for limiting exposure to air pollution is to stay indoors, but this conflicts with the need for children to exercise, play and travel to school. Similarly, recommendations to close schools in severe haze events impacts children's educational achievement. To add to the complexities, the advice relating to the use of facemasks for protection is largely non-evidence based, for children. The recommended industry-certified facemasks (N95) and surgical masks are not designed to fit to children's faces and, particularly for N95, could put stress on children's developing lungs (Horwell, Ferdiwijaya, Wahyudi, & Dominelli, 2017). For other types of respiratory protection, such as bandana or cloth masks, the effectiveness for both adults and children is questionable (Mueller et al., 2018).

Given these challenges, it is important to investigate parents/guardians' risk perceptions of air pollution, and how they protect their children, in order to understand current practices. Risk perception plays an important role in health behaviour change (Ferrer & Klein, 2015). However, it is crucial not only to explore what particular protection parents/guardians choose but, additionally, how and why parents/guardians' take these specific decisions.

Research Aim/Objectives/Questions/Hypotheses:

The aims of this study is to explore variations in parents/guardians' perceptions of hazard and risk surrounding children's exposure to air pollution, how these perceptions relate to current protective practices implemented by parents/guardians' for their children, and how parents/guardians' risk perceptions influence decision making to protect the children, in order to minimise air pollution impact to their health and wellbeing.

Data/Methods/Analysis:

The project was originally planned as a comparative case study between a location affected by chronic urban pollution (Jakarta, Java) and an area affected by seasonal, rapid-onset haze from vegetation combustion (Pekanbaru City, Riau, Sumatera). The fieldwork was planned between October 2019-August 2020. However, due to COVID-19, the Pekanbaru fieldwork was terminated close to its conclusion and the Jakarta fieldwork was cancelled. Therefore, this study now solely addresses risk perceptions of haze exposures.

In Pekanbaru City, the study was conducted in two different areas with different socio-demographic characteristics. The respondents were parents/guardians who have children aged 0-12 years old. The project used social research mixed methods approaches for data collection and analysis. The data on parents/guardians' risk perceptions of air pollution, the impact of air pollution to health and daily activities, protection practices, information distribution and intention to protect their children were collected using a combination of quantitative and qualitative data collection techniques. The quantitative data were collected via a questionnaire survey to 380 respondents. The qualitative data were collected by semi-structured interviews and focus group discussions. In addition, there was an experiment to test parents/guardians ability to estimate the severity of air pollution using daily diaries which were then compared to data collected using low-cost air quality sensors in their local neighbourhood.

Contributions to the SDGs:

Air pollution is targeted in several of the Sustainable Development Goals: under the Health (SDG 3.9), Cities (SDG 11.6) and Sustainable Consumption (SDG12.4) Goals. In particular, SDG 3.9 states that, by 2030, we must substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

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