

Introduction

Ambient air pollution is a growing global health concern tightly connected to the rapid global urbanization. Health impacts from outdoor air pollution exposure amounts to high burdens of deaths and disease worldwide. However, the lack of systematic collection of air pollution and health data in many low-and middle-income countries remains a challenge for epidemiological studies in the local environment. This study aimed to provide a description of the particulate matter (PM_{2.5}) concentration in the poorest urban residential areas of Nairobi, Kenya.

Methods

Real-time measurements of (PM_{2.5}) were conducted in two urban informal settlements of Nairobi City, Kenya's Capital, from February 2013 to October 2013. The measurements were conducted using *DustTrak II 8532* hand-held samplers at a height of about 1.5 m above ground level with a resolution of 1-min logging. Sampling took place from early morning to evenings according to a fixed route of measurement within areas including fixed geographical checkpoints.

Results

The study period average concentration of PM_{2.5} was 166 µg/m³ in the Korogocho area and 67 µg/m³ in the Viwandani area. The PM_{2.5} levels in both areas reached bimodal daily peaks in the morning and evening. The average peak value of morning concentration in Korogocho was 214 µg/m³, and 164 µg/m³ in the evening and in Viwandani was 76 µg/m³ and 82 µg/m³ respectively. The daily mid-day average low observed during was 146 µg/m³ in Korogocho and 59 µg/m³ in Viwandani.

Conclusion

The results show that residents in both slums are continuously exposed to PM_{2.5} levels exceeding hazardous levels according to World Health Organization guidelines. The study showed a marked disparity between the two slum areas situated only 7 km apart indicating the local situation and sources to be very important for exposure to PM_{2.5}.