

## Municipal Solid Waste Exposure and Health Concern: Indian Women are at Risk

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### Editorial

Municipal solid waste (MSW) management has emerged as an important human and environmental health issue. A large number of poor, downtrodden marginalized urban women are thriving on these recyclable wastes and are potentially exposed to a variety of occupational biohazards and safety risks. At present there are about millions of women in India who scavenge the city's garbage bins and MSW disposal sites to salvage recyclable materials like plastic, glass, paper and for a living [1]. These women are commonly known as 'ragpickers'. In India, ragpickers form the base of hierarchy of informal sector of the solid waste management [2] and are at greater risk of multiple adverse health issues including cardiovascular disease [1].

The urban population in developing country like India is consuming more resources and generating more wastes with greater purchasing power. As a consequence, generation of MSW in the country has been significantly increasing day by day [3]. Due to rapid industrialization and urbanization in India, the populations of the major Indian cities are increasing as more people are moving from rural to the urban areas for a living. Most of them usually live in urban slums in poor unhygienic conditions, and the nature of their occupation exposes them to potentially pathogenic bioaerosols. They rarely use gloves, masks or other protective gears while collecting recyclable waste. In most of the cases, they wear sandals often retrieved from the waste that exposes a substantial part of their foot to garbage. MSW in the country contains more moisture due to hot and humid conditions, and it facilitates breeding of pathogens. Moreover, medical wastes such as used needles, blood and body fluid-stained cotton, sanitary napkins and diapers are often mixed with MSW despite government rules forbidding it [4]. Thus, the ragpickers expose themselves to a host of pathogens while waste picking that may lead to the spread of various communicable diseases [5]. Although ragpicking is a means of livelihood for the poorest of the poor in the developing nations, little is known about the health hazard associated with this profession.

Recent study reported greater prevalence of hypertension, enhanced oxidative stress with increased number of circulating platelets, elevated levels of platelet aggregation and activation and an excess of platelet-leukocyte aggregates in circulation of the ragpickers compared with the housemaid control women. Collectively, these findings suggested higher risk of cardiovascular disease although the underlying mechanism of the link between ragpicking and platelet hyperactivity is still unrevealed [1]. Additionally, evidence of airway inflammation makes them more vulnerable to tissue damage and cardiovascular diseases [6]. Earlier study reported greater prevalence of upper and lower respiratory symptoms, lung function impairment, gastrointestinal, dermatologic, and neurobehavioral problems among ragpickers [7]. The depletion of intraplatelet serotonin in ragpickers points to a possible change in central neurotransmitters with behavioral implications. Morbidity was statistically significant among ragpickers who collected rags along dumpsite than street side and door to door waste collectors [2].

While earning their livelihood, ragpickers contribute significantly to the environment. However, they rarely have both social and occupational recognition in this country. Unhygienic sexual habit, improper temporary methods of contraception and multiple pregnancies along with high addiction behavior were also prevalent among women ragpickers in India. Sensitization of both general public and government is essential to legitimize this occupation and lifestyle through proper education and precaution how to handle that garbage at work. Since thousands of underprivileged women of the country are engaged in ragpicking for a living, efforts should be made by all concerned to provide alternative livelihood to them. This in turn may help to alleviate poverty and environmental degradation; characteristic of rapid and unplanned urbanization in India. A need-based educational training program helped to improve knowledge of these deprived women involved in ragpicking profession.

### References

1. Mondal NK, Roychoudhury S, Mukherjee S, Siddique S, Banerjee M, et al. (2016) Increased risk of cardiovascular disease in premenopausal female ragpickers of Eastern India: involvement of inflammation, oxidative stress, and platelet hyperactivity. *Mol Cell Biochem* 419: 193-203.
2. Uplap PA, Bhate K (2014) Health profile of women ragpicker members of a nongovernmental organization in Mumbai, India. *Indian J Occup Environ Med* 18: 140-144.
3. Mor S, Ravindra K, De Visscher A, Dahiya RP, Chandra A (2006) Municipal solid waste characterization and its assessment for potential methane generation: a case study. *Sci Total Environ* 371: 1-10.
4. Patil AD, Shekdar AV (2001) Health-care waste management in India. *J Environ Manage* 63: 211-220.
5. Hunt C (1996) Child waste pickers in India: the occupation and its health risks. *Environ Urbanization* 8: 111-118.
6. Ray MR, Roychoudhury S, Mukherjee S, Siddique S, Banerjee M, et al. (2009) Airway Inflammation and Upregulation of b2 Mac-1 Integrin Expression on Circulating Leukocytes of Female Ragpickers in India. *J Occup Health* 51: 232-238.
7. Ray MR, Roychoudhury S, Mukherjee G, Roy S, Lahiri T (2005) Respiratory and general health impairments of workers employed in a municipal solid waste disposal at an open landfill site in Delhi. *Int J Hyg Environ Health* 208: 255-262.

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