

The Potential Health Hazards Associated With Waste Scavenging in Ghana. A Case Study of Three Selected Dumpsites in Tema Metropolis

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ABSTRACT

The health implications of waste scavenging in solid waste management in Tema metropolis, Ghana, has been a cause of concern as no proper attention has been given to these scavengers. The study was conducted with the background of Municipal Solid Waste (MSW) management in the Greater Accra region, especially, in Tema metropolis to throw more light pertaining to open dumping and its associated health hazards posed to scavengers who form the informal sector of recycling in waste management, and communities nearby. Data was acquired by sampling waste materials from the dumpsites to isolate and identify the potential pathogens that degrade the waste, identification of aeromycoflora in and around the dumpsites using the plate exposure technique, and a swab test on scavengers to identify potential pathogens that may be of public health importance. A questionnaire survey based on age, sex, educational status, socio-economic status, habits and health effects was conducted from 100 randomly selected rag-pickers from the three dumpsites of Tema metropolis to assess the contribution of waste scavengers to waste management. To isolate and identify the potential pathogens that degrade the waste, serial dilutions of the samples were carried out and aliquots (1 ml) of the diluted samples were inoculated into appropriate media. Similarly, hands of waste scavengers were swabbed prior and during scavenging, as well as PCA and PDA plates exposed at the dumpsites for microbial analysis. Biochemical test was carried out to identify the particular types of bacteria isolated. The study revealed eleven genera of bacteria, *Enterococcus faecalis*, *Bacillus sp.*, *Klebsiella pneumoniae*, *Enterobacter amnigenus*, *Proteus mirabilis*, *Escherichia coli*, *Citrobacter freundii*, *Pseudomonas aeruginosa* and *Salmonella sp.*, and four genera of fungi. The fungi isolated from all three experiments were *Aspergillus niger*, *Aspergillus flavus*,

Aspergillus fumigatus, *Aspergillus clavatus*, *Fusarium aqaeductuum*, *Mucor* sp., and *Rhizopus stolonifer*. The culture result from waste scavengers, solid waste samples, and the propagules of air also showed similar organisms including *Enterococcus faecalis*, *Bacillus* sp., *Klebsiella pneumoniae*, *Enterobacter amnigenus*, *Escherichia coli* and *Pseudomonas aeruginosa*. It can be inferred from this study that aside scavengers' contribution to managing waste and their health risk, waste scavenging poses a great threat to the society as scavengers serve as routes for the transmission of certain pathogens that degrade waste to the larger society, thereby, constituting some public health hazards. The preferred option is to ensure proper personal protection of the scavengers and integrating this informal sector into waste management planning, building on their practices and experiences while working to improve efficiency, living and working conditions of the scavengers.

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