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Disposal of medical waste during pandemic

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Abstract

The origin of the novel human coronavirus (SARS-CoV-2) and its potential for harm increased face mask and medical waste in the environment, thereby necessitating the urgent prevention and control of the pandemic. To estimate the face mask and medical waste generation in Asia during the pandemic to convince the waste management and scientific communities to find ways to address the negative impact that the waste disposal has on the environment. Standardisation, procedures, guidelines and strict implementation of medical waste management related to COVID-19, community habitats and public areas should be carefully considered to reduce pandemic risks in hospitals, as proper medical waste disposal effectively controls infection sources.

Keywords: Infectious waste SARS-CoV-2 transmission waste management outbreak disposal

Introduction

Currently, there are over 20.1 million global confirmed cases and ~742 thousand deaths across the globe. Despite income group (low, middle and higher income), the COVID-19 pandemic has exposed several lapses and limitation of the current socio-economic, health and environment-related sectors across countries. Though the COVID-19 pandemic is reported to have reduced air pollution and environmental-related noise and improved biodiversity and tourist sites, however, the impact of stay-at-home and preventive measures on waste management is alarming. Due to the stockpiling of gloves, gowns, masks and other protective clothing and equipment, there appears to be a waste emergency due to the unusual production of waste from both households and health facilities. Failure to properly manage the waste generated from health facilities and households may escalate the spread of COVID-19 via secondary transmission. The potential rampant dumping, open burning and incineration could affect air quality and health outcomes due to the exposure to toxins. Thus, there exists a challenge of managing unusual waste sustainably using available waste facilities while reducing air pollution, preventing secondary viral transmission and mitigating potential health risk. Besides, there could be serious consequences for developing countries without standard waste management technologies and waste emergency policies to curb the pandemic.

Medical waste assessment

Sustainable management of medical waste is problematic and amplified, especially in emergencies like the COVID-19 pandemic. Due to the novelty of the global pandemic, modification to existing waste facilities to control the unusual medical waste and its associated viral spread effect requires adequate information on the amount of medical waste generated, hot spots for waste generation and available treatment facilities. On account of potential rapid expansion volumes of medical waste, several technical know-how on sorting, segregation, transport, storage and sustainable waste management technologies are required to maximize existing infrastructures to accommodate the emergency. Improper management of medical waste has the potential to expose patients, health workers and waste managers to injuries, infections, toxic consequences and air pollution. The different forms of medical waste and its derivatives include non-hazardous waste, pathological waste, radioactive waste, infectious waste, chemical waste, cytotoxic waste, sharps waste and pharmaceutical waste. The global pandemic has led to an unusual amount of reported medical waste. For example, the COVID-19 pandemic in China is reported to have increased medical waste from personal protective equipment like gloves, face masks and eye protection due to a surge in personal protective equipment and immediate disposal after use. Due to the overwhelming surge in daily waste (i.e. over 240 metric tonnes) and increasing levels of hospital medical waste by sixfold, it is reported that the influx of COVID-19 patients led to the construction of waste

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plants and deployment of 46 mobile waste treatment facilities in China (Calma 2020). In Barcelona, medical waste such as overall, face masks and gloves increased by 350%—generating about 1,200 tonnes of medical waste compared to the usual waste of ~275 tonnes.

Non-medical and household waste

The institution of lockdown, stay-at-home policy and other preventive measures to contain the spread of COVID-19 saw an increase in production and consumption patterns of non-medical and household-related products such as masks, gloves, thermometers, sanitizers and cleaning products, toilet papers and foodstuffs. Sudden lockdown and fear of the virus lead to the intensification of single-use products and panic buying. The unprecedented use of masks to reduce the exposure to COVID-19 is reported to have increased its production, hence increasing the global sales. Due to the current role of protective equipment like disposable masks and gloves, the COVID-19 pandemic appears to have thwarted efforts to decline plastic pollution. To contain the spread of COVID-19, the World Health Organization projects a monthly global expenditure of 1.6 million plastic-based protective goggles, 76 million plastic-based examination masks and 89 million plastic-based medical masks. The daily production of plastic-based masks in February increased by 116 million. There are several reports of enormous plastic waste soaring from 1500 to 6300 tonnes daily in, owing to food products delivered to

homes, whereas the 300% rise in illegal waste disposal during the lockdown period.

Conclusion

With the increasing spread and impact of the COVID-19 pandemic on economic development and health outcomes, there is an urgent global call for waste management from households, medical facilities and toxic waste to be treated as essential public service. This will in effect mitigate the potential threats of COVID-19 pandemic on environmental sustainability and health outcomes. In line with the United Nations Environment Program of ensuring sustainable waste management, guidelines for containing the spread of COVID-19 through waste management include treatment of residual waste (tissues, handkerchiefs and similar organic and packaging waste) in incineration plants at a temperature near 1000-degree Celsius to ensure safe and complete destruction of the virus. COVID-19 has exposed the world to several environmental threats due to plastic pollution—attributable to unsustainable use of single-use plastics. Owing to the global adoption of personal protective equipment such as face masks, future research should aim at developing biodegradable and environmentally friendly protective gears including face masks, gloves, overalls, among others, to accelerate the agenda towards achieving sustainable production and consumption while reducing environmental costs.



Fig 1: Shows Personal Protective Equipment

Disposal of biomedical waste including PPE kits worn by healthcare professionals and public became a challenge during the ongoing Covid-19 pandemic, the Union health ministry told the Rajya Sabha on Sunday.

"As informed by Central Pollution Control Board (CPCB), disposal of bio-medical waste including

Personal Protective Equipment

(PPE) kit worn by healthcare professionals as well as general public became a challenge during the ongoing Covid-19 pandemic.

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