Sanitary alert: acute gastroenteritis associated with house-fly infestation after heavy rainfall in Karachi, Pakistan

Mariam Baloch[1], Shafaq Tarar[2], Sarah Taimur[2]

[1]Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan;
[2]Department of Medicine, Division of Infectious Diseases, Icahn School of Medicine at Mount Sinai, New York, USA

Dear Editor,

Drastic weather events as a result of global climate change have a devastating impact on the environment and human society [1]. Human influenced global warming is contributing to increase in heavy precipitation in many parts of the world. Infection outbreaks in association with exposure to urban floodwater, have been reported in the literature [1, 2]. Until we work towards improvement of urban drainage systems, arthropod infestation and disease outbreaks associated with pluvial flooding will continue to occur and potentially even worsen. This year, the highly populated metropolis of Karachi in Pakistan, has borne the brunt of heavy rainfall during the months of July and August. Pluvial flooding of the streets of Karachi and overflow of sewage systems leading to contamination of stagnant rain water served as an excellent breeding ground for arthropods and created the ideal conditions for infection transmission through these vectors.

The housefly *Musca domestica* is an important vector of several infections, particularly those involving the gastrointestinal tract. It has a short life span but breeds easily in stagnant sewage contaminated water. According to Karachi's largest public sector hospital, Jinnah Post-graduate Medical Center (JPMC), this is the worst infestation of house-flies that the city has seen. Dr. Seemin Jamali Executive Director of JPMC commented on the current situation saying: "*There are huge swarms of flies and mosquitoes. It's not just affecting the life of the common man - they're so scary, they're hounding people. You can't walk straight on the road; there are so many flies everywhere*" [3]. Experts have declared it a "sanitary emergency" and have warned about the spread of typhoid, malaria, dengue fever, chikungunya, Crimean-Congo fever, respiratory disorders and gastroenteritis. Unsurprisingly, in association with the recent pluvial floods, more than 12,000 cases of gastroenteritis have been reported in the last ten days of August 2019; which is an increase of 300 percent in comparison to prior provincial health department data [4]. Needless to say, this is a drastic increase in the infection rate and burden on the already struggling public healthcare system. Several hospitals across the city have been struggling to care for an astounding number of patients primarily children, with acute gastroenteritis. Following *Eid-ul-Azha*, the sanitary situation on the streets of Karachi was impacted further due to improper disposal of animal remains following ceremonial slaughter. Since then, more than 2,000 patients have been admitted at Ruth Pfau Civil Hospital, 2,889 at National Institute of Child Health, 2,800 at Abassi Shaheed Hospital and 1,400 at Lyari general hospital [4]. This trend is corroborated by findings of a study in Wisconsin, USA, where a significant association was found between amount of rainfall and emergency department visits for acute gastrointestinal illness in children [1]. Another study from The Netherlands reiterated this and showed an association between pluvial flooding and gastrointestinal complaints [2].

Corresponding author
Mariam Baloch
E-mail: mariamismailbaloch@gmail.com

According to Das J.K. et al., millions of children die every year from infectious diarrhea, making it a significant contributor to the overall child mortality, financial and resource burden on public hospitals [5]. Improvement in medical care must be combined with implementation of rigorous preventative measures to reduce the impact of these infections on the population. It is therefore, of utmost importance that every effort is made to improve urban infrastructure in Karachi; to stay at par with population growth and lifestyle changes of its 15-million-plus residents. Fly control can be a significant assisting factor in curtailing the current outbreak and prevention of future events. Urgent action is needed to eliminate breeding sites through improved water drainage systems, pesticides and meticulous garbage disposal. In addition, public education programs on hand hygiene, sanitary toilet habits, boiled water use for drinking and covering of utensils/foods, are some of the many steps required to reduce the high incidence of infectious gastroenteritis following periods of heavy rainfall.

Conflict of interest

The authors have no conflicts of interest to declare.

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