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Creating sustainable cities through decentralised waste management: training of households

Submission date
12/12/2021

Recruitment status
No longer recruiting

Registration date
13/12/2021

Overall study status
Completed

Last Edited
16/01/2024

Condition category
Other

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
The project examines the adoption and health, environmental and economic impacts of decentralised solid waste management in urban communities (including their households, businesses and waste workers). The aim of the study is to determine whether decentralised waste management provides a cost effective solution for the large volumes of waste that are dumped without treatment in landfills and in the open in many countries, especially in developing economies.

Who can participate?
All households in designated urban areas of Patna, India can participate. From the previous registered study for this project (ISRCTN registry - 40587), a building census was undertaken through door-to-door visits to determine the number of households/businesses. The estimated population is about 20,000 households across the Treatment and Control groups.

What does the study involve?
This listing of households in Treatment and Control groups will be used to create groups of households for treatment. The treatment consists of door to door visits in all buildings in designated areas of Patna to provide information and training to households regarding decentralised waste management. This includes safe waste disposal, recycling, segregation of waste and home composting. It also includes local composting of segregated waste disposed of by households in the Treatment groups by waste workers engaged by the study.
The order of treatment will be randomly assigned to groups of households within the Treatment Area. Households within the treatment area will be grouped based on the waste truck route that they fall under, the number of households on the route and their geographical proximity to each other. The treatment will be delivered in two phases of equal length to equal numbers of groups of households each. Households in truck routes contiguous to the Treatment Area will form the Control and receive no treatment.
The study will collect data related to waste practices and economic, health and environmental characteristics of the households and waste workers, before and after the interventions. The primary outcome being collected is waste practices of households (how much waste do they

generate and how do they dispose of it). This will come from self-reported questions on waste practices of households and enumerators' observations of waste practices at the time of waste disposal by households to the municipal waste trucks.

What are the possible benefits and risks of participating?
The risk to participants is minimal and the benefits will be accurate knowledge of waste management in the areas which will be used to develop further research and policy on safe decentralised solid waste management for the households. Field activities are being conducted in cooperation with the city government (Patna Municipal Corporation). WHO guidance for social distancing will be followed to ensure the safety of enumerators, workers and households. Appropriate PPE has been ordered to safeguard against hazardous waste.

Where is the study run from?
London School of Economics (UK)

When is the study starting and how long is it expected to run for?
June 2021 to December 2022

Who is funding the study?
UK Research and Innovation

Who is the main contact?
Dr Swati Dhingra, s.dhingra@lse.ac.uk

Contact information

Type(s)
Scientific

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Protocol serial number
REF/2021/08/046464

Study information

Scientific Title
Informal labour markets and decentralised solid waste management in urban areas: training of households

Acronym
CityWaste

Study objectives
The study examines whether decentralised waste management can help improve the environmental, health and economic outcomes of urban areas.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 21/07/2021, London School of Economics Research Ethics Committee (Houghton Street London WC2A 2AE United Kingdom; +44 (0)20 7852 3629; research.ethics@lse.ac.uk), ref: 28362

Study design
Interventional randomized controlled trial

Primary study design
Interventional

Study type(s)
Quality of life

Health condition(s) or problem(s) studied
Solid waste management in urban areas and diversion of untreated waste from landfills

Interventions
The intervention will provide information and training on solid waste management (such as waste segregation, safe waste disposal and home composting) to households in designated urban areas of Patna (Bihar, India). The latter is referred to as the "Treatment Area" and consists of various routes of municipal waste collection trucks. Households within the treatment area will be grouped based on the waste truck route that they fall under, the number of households on the route and geographical proximity to each other. The treatment will be delivered in two phases of equal length to equal numbers of groups of households each. The order of the treatment will be randomised across truck routes, with half the groups of households being treated in each phase of the treatment. The randomisation is based on picking truck route numbers from an urn. Households within truck routes contiguous to the Treatment Area will form the Control and receive no treatment.
The duration is about 4 months – 9/12/2021 to 21/3/2022

Intervention Type
Behavioural

Primary outcome(s)

Waste generation and recycling of households at the time of enumeration measured through:
1. Self-reported survey questions based on WHO’s WASH questionnaire, with a recall period of 1 week, 2 weeks, 1 month, “usually”, or "last time the waste was disposed"
2. Weekly observations by enumerators on the weight of waste disposed and whether the waste is disposed in segregated form on the day of enumeration.

Key secondary outcome(s))
Health, civic and socioeconomic outcomes of waste workers and the community, at the time of survey enumeration using self-reported survey questions with a weekly/fortnightly recall period (health), weekly recall period (socioeconomic) and annual/"usual" recall period (civic) based on India’s Demographic and Health Surveys, Periodic Labour Force Surveys, LSE Alternative Work Arrangements Survey, American Teens' Knowledge of Climate Change and UNESCAP Waste Management Assessment

Completion date
15/12/2022

Eligibility

Key inclusion criteria
1. All households in the Treatment Area
2. All waste worker households will be targeted for detailed surveying of waste work.

Participant type(s)
All

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

Key exclusion criteria
Individuals below 18 years are excluded from all but the 6 environmental education questions in the detailed surveys.

Date of first enrolment
16/12/2021

Date of final enrolment
21/03/2022

Locations

Countries of recruitment
India

Study participating centre
The City of Patna
Patna
India
800001

Sponsor information

Organisation
London School of Economics and Political Science

ROR
https://ror.org/0090zs177

Funder(s)

Funder type
Government

Funder Name
UK Research and Innovation

Alternative Name(s)
UKRI

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed in the current study will be stored in a publicly available repository. Anonymised de-identified data will be made publicly available through the

London School of Economics RLAB. https://rlab.lse.ac.uk/
The data will be made available for two years after publication in a peer-reviewed journal, expected to be 15/01/2023 to 14/01/2025.
The data will be made available for research purposes as stated in the consent form.
Only anonymised data and aggregate statistics will be published.
A data management plan is attached.

IPD sharing plan summary

Stored in publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results			16/01/2024	No	No
Participant information sheet	version 1	01/09/2021	13/12/2021	No	Yes