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Creating sustainable cities through decentralised waste management: school training

Submission date
12/05/2022

Recruitment status
No longer recruiting

Registration date
28/05/2022

Overall study status
Completed

Last Edited
04/01/2024

Condition category
Other

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

Plain English summary of protocol

Background and study aims
This 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 schools in designated urban areas of Patna, India can participate. From the previous registered study for this project (https://www.isrctn.com/ISRCTN16964926), a building census was undertaken through door-to-door visits to determine the number of schools. The estimated number is 50 schools but the number of students is uncertain as schools have varying numbers in post-primary education. Students in grade 6 or above will be selected for the treatment.

What does the study involve?
This listing of schools and classes in grade 6 or above will be used to create groups of students for treatment. The treatment consists of door-to-door visits in all schools in designated areas of Patna to provide information and training to students regarding decentralised waste management. This includes safe waste disposal, recycling, segregation of waste and home composting. The order of treatment will be assigned based on school and class availability during the visit time. The visit time will be fixed by agreement between the enumerators and the school authorities. The treatment will be delivered in two phases to equal numbers of groups of students in each school. Students in phase 1 will receive the treatment first and students in phase 2 afterwards. Phase 2 students will therefore be the control group for phase 1 students. The study will conduct a waste test before and after the treatment. This consists of multiple-choice questions related to waste practices and rules. Knowledge of waste practices of students (how much waste does the city generate, how and where does it go) is assessed through a

project comprising of a written essay on the student's waste practices after the information and training intervention. This will be graded by trained enumerators working on waste management in the city.

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. 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, students 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?
July 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

Contact name
Dr Swati Dhingra

Contact details
CEP LSE
Houghton Street
London
United Kingdom
WC2A 2AE
+44 (0)7814623410
s.dhingra@lse.ac.uk

Additional identifiers

Protocol serial number
REF/2021/08/046464

Study information

Scientific Title

Informal labour markets and decentralised solid waste management in urban areas: school training

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, UK; +44 (0)20 7852 3629; research.ethics@lse.ac.uk), ref: 28362

Primary study design
Interventional

Study design
Stepped-wedge cluster-randomized controlled trial

Study type(s)
Treatment

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 schools in designated urban areas of Patna (Bihar, India). The latter is referred to as the "Treatment Area" and consists of schools on various routes of municipal waste collection trucks. Students in schools within the treatment area will be grouped based on their class or class section that they fall under. The treatment will be delivered in two phases to equal numbers of groups of students each. Half the groups will be treated during phase 1 of the treatment and the other half in phase 2. Students in phase 2 will form the Control for students in phase 1. The randomisation is based on picking class numbers from an urn. The treatment group within a school depends on availability during the visit time. The intervention will last 90 minutes per group. The follow up will take place 1 month after the first treatment in a school.

Intervention Type
Behavioural

Primary outcome(s)
Measured before and >2 weeks after the intervention:
1. Waste test score based on a multiple-choice test of waste rules and best practices. The researchers have designed a 16-question test with multiple (2-3) choices each and there is one correct answer of 1 point per question. The test is an in-class 10 minute written form where the multiple choices need to be ticked.

2. Waste project score based on a written essay and graded by trained enumerators. The researchers have designed two projects related to waste segregation and home composting and students will write a 200-word essay with a photo explaining their experience with the project activity. This will be scored by trained enumerators.

Key secondary outcome(s)
Waste generation and recycling of households at the time of enumeration measured through:
1. Self-reported survey questions based on the 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

Completion date
15/12/2022

Eligibility

Key inclusion criteria
Students in grade 6 or above at the participating schools

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Child

Sex
All

Key exclusion criteria
Children aged below 9 years

Date of first enrolment
13/05/2022

Date of final enrolment
31/08/2022

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 2 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			04/01/2024	No	No
Participant information sheet	version 1	01/09/2021	13/05/2022	No	Yes