Effects of interventions aimed at improving cleaning behaviour of privately shared toilet users in Kampala Slums, Uganda

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Introduction

- 761 million people use unimproved shared toilets (WHO/UNICEF, 2013/2014)

- 30% of Sub-Saharan Africa’s urban population use shared toilets

- 50% of Uganda shared toilets (WHO/UNICEF, 2014), and often dirty (Tumwebaze et al., 2014).

- Importance of hygiene, such as toilet cleanliness in disease prevention is known, little is largely known on shared toilets (Mara et al., 2010, Bartram & Cairncross, 2010).

- No previous studies have explicitly focused on shared toilet cleanliness and users’ cleaning behaviour.

- Theory-based interventions key in behaviour change promotion (Schwarzer, 2008; Michie et al., 2008; Aboud & Singla, 2012).
Sanitation facilities

What is a privately shared toilet?

**Private toilet:** Facility used mainly by one household or members of the same family

**Privately shared toilet:** Facility jointly used by different families, mostly known to each other or sharing a compound house (Management mainly by users)

**Public toilet:** Facility used by anybody mostly on a pay-per-use basis (Management mainly by a caretaker)

**These can be:**
- Flushing or pour flush
- Ventilated improved pit latrines (VIP) / Lined pits & have a vent pipe
- Simple pit latrines / unlined pits

Tumwebaze et al., 2012 and Adrien et al., 2013
Research questions

1. How clean are shared toilets in Kampala slums and which psychological and social dilemma factors influence shared toilet users’ collective cleaning behaviour?

2. Which behavioural change interventions increase cleaning behaviour of shared sanitation users, and the performance of behavioural determinants in Kampala slums?
Shared toilet users’ collective cleaning and determinants (Background slide)

Self-reported cleanliness

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very clean</td>
<td>13</td>
<td>1.3</td>
</tr>
<tr>
<td>Clean enough to use</td>
<td>202</td>
<td>19.9</td>
</tr>
<tr>
<td>Quite dirty</td>
<td>219</td>
<td>21.6</td>
</tr>
<tr>
<td>Dirty but usable</td>
<td>467</td>
<td>46.1</td>
</tr>
<tr>
<td>Very dirty</td>
<td>112</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Pictorial illustration of varying cleanliness levels

- Data on socio-demographic characteristics, sanitation situation and behavioural factors collected.
- 50 / 188 slums randomly chosen.
- 68.3% of 1,500 participants using shared toilets.
- 74.2% were female & 59.9% tenants.
Shared toilet users’ collective cleaning and determinants

3 of the 50 slums in 1st study, with most dirty toilets were investigated

Sample distribution

<table>
<thead>
<tr>
<th>Municipals</th>
<th>No. of H/Hs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kawempe</td>
<td>97</td>
</tr>
<tr>
<td>Makindye</td>
<td>127</td>
</tr>
<tr>
<td>Rubaga</td>
<td>200</td>
</tr>
</tbody>
</table>

- 424 shared toilet users interviewed
- Targeting all households sharing a toilet room
- Data on socio-demographic, sanitation situation and behavioural factors collected.
- 75% were female & 91.5% tenants
Psycho-social methods / measures applied

RANAS factors
- Risks
- Attitude
- Normative
- Ability
- Self-regulation

Social dilemma factors
- Attributions
- Social motives
- Social identity
- User households behaviour
- Communication
- Perceived efficacy
- Group dynamics

- Formation or maintenance of behaviour performance; such as shared toilet cleaning depends on how favourable individual factors are to the behaviour (Mosler, 2012)

- Social dilemmas → conflict situations in which individuals commonly make decisions intended for their own-self interests than group collective interests (Liebrand et al., 1992)

- Importance of communication in prompting cooperation and collective action

- Cleaning of shared toilets as a social dilemma → Why clean if others don’t?? (Tumwebaze & Mosler, 2014)
Shared toilet users’ collective cleaning behaviour

Observed toilet cleanliness & users cleaning

- As expected, regular cleaning improves toilet cleanliness
- Note: facilities could be clean too irrespective of one’s regular cleaning BUT only true if other users are cleaning (free riders)
- Dirty toilets mainly associated with diarrhoea (70%), cholera (58.7%), candida (41%)

Observed cleanliness indicators

<table>
<thead>
<tr>
<th>Excreta around squat hole or toilet slab</th>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>112</td>
<td>26.8</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>306</td>
<td>73.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>418</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Floor soaked with urine

| Yes | 160 | 38.3 |
| No  | 258 | 61.7 |
| Total | 418 | 100.0 |

Flies in the toilet room

| Yes | 84  | 20.1 |
| No  | 334 | 79.9 |
| Total | 418 | 100.0 |

Squat hole has cover / toilet lid

| Yes | 14  | 3.3  |
| No  | 404 | 96.7 |
| Total | 418 | 100.0 |

Toilet smelly

| Yes | 147 | 35.2 |
| No  | 271 | 64.8 |
| Total | 418 | 100.0 |

Signs of excreta on toilet room walls

| Yes | 142 | 34.0 |
| No  | 276 | 66.0 |
| Total | 418 | 100.0 |
Sanitation users’ cleaning behaviour

Sanitation users’ understanding of cleanliness and cleaning materials used

- Daily cleaning and cooperation reported for cleanliness
- Cleaning gendered: females (73.1%), males (14.9%), Both (9.9%), None (2.1%)
- Most facilities were raised VIPs (74.8%), followed by simple pit latrines (14.1%) and pour flush (11.1%)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (N=424, Multiple responses)</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived understanding of a clean toilet</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No faeces</td>
<td>302</td>
<td>71.2</td>
</tr>
<tr>
<td>Toilet does not smell</td>
<td>272</td>
<td>64.2</td>
</tr>
<tr>
<td>Toilet room has no flies</td>
<td>195</td>
<td>46.0</td>
</tr>
<tr>
<td>Floor soaked with urine</td>
<td>175</td>
<td>41.3</td>
</tr>
<tr>
<td>Faeces on toilet walls</td>
<td>30</td>
<td>7.1</td>
</tr>
<tr>
<td>Toilet room has no maggots</td>
<td>27</td>
<td>6.4</td>
</tr>
<tr>
<td>Toilet hole cover lid available</td>
<td>20</td>
<td>4.7</td>
</tr>
<tr>
<td>Toilet ventilated</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Cleaning items</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water mixed with soap detergent</td>
<td>313</td>
<td>73.8</td>
</tr>
<tr>
<td>Broom</td>
<td>305</td>
<td>71.9</td>
</tr>
<tr>
<td>Plain water</td>
<td>65</td>
<td>15.3</td>
</tr>
<tr>
<td>Cleaning brush</td>
<td>46</td>
<td>10.8</td>
</tr>
<tr>
<td>Use a cleaning rag</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>Smoking it using papers</td>
<td>4</td>
<td>.9</td>
</tr>
</tbody>
</table>
### Shared toilet users’ collective cleaning behaviour

#### RANAS & Social dilemma (SD) cleaning determinants (p<0.05, R square = .78)

<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
<th>Scale</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude factors</strong></td>
<td>Affective belief (dislike to clean shared toilet)</td>
<td>9</td>
<td>-.13</td>
</tr>
<tr>
<td><strong>Norm factors</strong></td>
<td>Personal norm (cleaning obligation)</td>
<td>5</td>
<td>.17</td>
</tr>
<tr>
<td><strong>Ability factors</strong></td>
<td>Maintenance self-efficacy (no cleaning roster)</td>
<td>5</td>
<td>-.06</td>
</tr>
<tr>
<td><strong>Self-regulation factors</strong></td>
<td>Action control/planning (cleaning routine)</td>
<td>5</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>Commitment (to clean)</td>
<td>5</td>
<td>.16</td>
</tr>
<tr>
<td><strong>Social dilemma factor</strong></td>
<td>Social motive (perceived more cleaning)</td>
<td>9</td>
<td>.12</td>
</tr>
<tr>
<td></td>
<td>Behaviour of others (less cleaning behaviour)</td>
<td>9</td>
<td>-.06</td>
</tr>
</tbody>
</table>

### Cleanliness and cleaning intention

- **Social motive**: Do you clean the shared toilet less or more often than the other users? 9 scale
- **Behaviour of others**: I do not clean the shared toilet more because others do not do the same. How much do you agree with the statement? 9 scale
Cleaning interventions

Group-based interventions (communication-based)

• **Discussions** only and discussions supplemented with **public written commitment** implemented to improve shared toilet users’ cleaning behaviour.

• Only participants with **dirty facilities** in the 2\textsuperscript{nd} study were targeted.

• **30 groups** formed (190 H/Hs) and randomized to discussions, discussions plus commitment and control.

• Participants **clustered** by toilet room shared.

<table>
<thead>
<tr>
<th>Study groups by slums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slum</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Mulago III</td>
</tr>
<tr>
<td>Lufula</td>
</tr>
<tr>
<td>Kironde</td>
</tr>
</tbody>
</table>

Cleanliness and cleaning intention

Users’ cleaning behaviour

Cleaning interventions

Interventions’ effects and effectiveness

General limitations
Cleaning interventions

Group discussions & discussions + commitment

Risk factors
- Disease vulnerability
- Disease severity

Attitude factors
- Cleaning affect
- Time cost
- Cleaning effort

Norm factors
- Cleaning families
- Cleaning approval
- Cleaning obligation

Ability factors
- Cleaning cooperation confidence
- Cleaning ease
- Cleaning roster

Self-regulation factors
- Habit
- Cleaning routine
- Remembering
- Commitment

Interventions lasted 3 months (March – May 2013)

- Discussions were among users’ of a toilet room and the content was; way toilet used, participation in cleaning, challenges and their solutions to increase cleaning participation.

- Cleanliness and cleaning intention
- Users’ cleaning behaviour
- Cleaning interventions
- Interventions’ effects and effectiveness
- General limitations
Intervention effects and effectiveness

- 3rd survey evaluated the effects and effectiveness of group discussions in increasing facility users’ cleaning behaviour.
- 305 interviewed at post intervention survey (118 belonged to intervention groups)
- 119 missed at follow-up (72 belonged to interventions).

Almost 3x increase

Shared toilet cleaning behaviour

Regular toilet cleaning

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean (T1)</th>
<th>Mean (T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No discussions</td>
<td>0.71</td>
<td>0.79</td>
</tr>
<tr>
<td>Discussions</td>
<td>0.64</td>
<td>0.89</td>
</tr>
<tr>
<td>Discussions + Commitment</td>
<td>0.58</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Cleanliness and cleaning intention
Users’ cleaning behaviour
Cleaning interventions
Interventions’ effects and effectiveness
General limitations
Intervention effects and effectiveness

Change in users’ cleaning behaviour and determinant factors

- Compared controls, Change in cleaning behavioural determinants was increasing more in the discussions & discussions + public written commitment groups.
Cleaning interventions

Multiple mediation analysis of group discussion effectiveness on cleaning behaviour and effects on behavioural determinants

- Mediation analysis (Preacher & Hayes, 2008)
- Importance of intervention process factor evaluation (Abraham, 2012)
Cleaning interventions

Factors through which discussions effectiveness on cleaning behaviour was transmitted

**Discussions**

**Attitude factors**
- Cleaning affect

**Norm factors**
- Cleaning approval
- Cleaning obligation

**Ability factors**
- Cleaning ease

**Cleaning behaviour increase**

- **Cleaning affect** – discussions especially when added with a commitment increased people’s liking for cleaning of shared toilets.
- **Cleaning approval** – discussions strengthened people’s beliefs that others would approve their cleaning of shared toilets.
- **Obligation** – discussions when added with a commitment increased people’s personal importance towards the cleaning of shared toilets.
- **Cleaning ease** – discussions when added with a commitment led to decrease in people’s perceived difficulty to cleaning of shared toilets.
General limitations & Implications

• Limited comparison of findings with previous studies.

• In regard to the interventions;
   Variation of intervention groups - not all targeted participants for the group discussions were always present. This may have compromised their effectiveness.

   Intend to perform a slum-based analysis to see how the interventions worked specific to studied slums.

   Regular in & out movements of target populations from one household or location to the other compromises the sample size and power

  ❖ Never the less, our findings provide key foundation for further theory and evidence-based intervention research on improving the cleaning behaviour of shared toilet users, needed for better health and improved sanitation coverage.

  ❖ Categorization of improved shared facilities. While number of sharing families is important, our research also shows that state of cleanliness is important. > Dependent on users behaviour, irrespective of the number of user families. Clear definition of cleanliness is however needed.
Acknowledgements

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Thank for your attention

Questions / comments

How many Keep your shared toilets clean?

You Are All Invited Friday 17th to our side Event on Effectively Changing WASH Behaviours, Bellflower

Inno & his field team