HYGIENE AND SANITATION
ASSESSMENT OF PUBLIC SITES
IN THE CITY OF MZUZU

CHANNING CARNEY-FILMORE, EVINESS MADA KAPATU, MELINA
MALAKASI, ALIEN MATHEWS MNYIMBIRI, JEALOUS MWANGENDE, ANN
ROGERS, MARIA VOLLMER, TESSA WALDROP
RESEARCH QUESTIONS

• What is the hygiene and cleanliness quality of public sanitation facilities?
• How do people manage their sanitation and hygiene needs in the absence of these facilities?
MAIN OBJECTIVES

• Goal: to understand sanitation practices at public sites
  • Strategically test public spaces
  • Identify *E. coli* and total coliform contamination
  • Administer interviews
  • Pinpoint service gaps at public sites
MATERIALS AND METHODS

Study site

- Mzuzu city, Malawi
- 10 public sites in urban and peri-urban areas
- Sampled medical facilities, schools, markets, and other sites
MATERIALS AND METHODS

Study Design

• Quantitative data involved determination of *E. coli* and total coliforms in the samples

• Qualitative data was derived from the administered questionnaires and observation checklists
TYPES OF TOILETS

Flush Toilet
N=20

Flush Latrine
N=11

Pit Latrine
N=10
CLEANLINESS SCALE

Clean

Some Urine/Trash

Visible Feces
CLEANLINESS OF TOILET TYPES

Pit Latrines (N=11) | Flush Latrines (N=10) | Flush Toilets (N=20)

- Clean
- Some Urine/Trash
- Visible Feces
INTERVIEWEES’ SANITATION FACILITY SATISFACTION

<table>
<thead>
<tr>
<th>Location</th>
<th>Satisfied</th>
<th>Somewhat Satisfied</th>
<th>Unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Sites (N=14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Markets (N=25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools (N=15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Facilities (N=18)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**E. COLI AND TOTAL COLIFORMS**

- Out of a total 150 samples, 12 had *E. coli*.
  - Predominantly found in latrine blocs and on hands
  - Markets, transportation centers, and medical facilities had the highest concentrations

- Out of the total samples, 74 had coliforms
  - Mostly found in latrine blocs and on surfaces
  - Markets, medical facilities, and transportation centers had the highest concentrations
E. coli presence in samples

• Low presence of *E. coli*
• Our data was not conclusive
• Evidence of fecal matter, but no *E. coli*
CITY VS. PRIVATELY MANAGED SANITATION FACILITIES

Interviewee satisfaction was significantly higher at privately managed facilities ($p=0.045$)
Paying Toilets

- Price as a deterrent to use the facilities
  - Open defecation
  - Abuse of free of charge facilities
- No correlation between cost and quality of facilities
“Since you have to pay to use the toilets, people urinate anywhere, especially during the night.”
-Male, Transportation Center
MISUSE OF FLUSH TOILETS

• A main factor affecting cleanliness

• Flush toilets are not being properly used, they are constantly “broken”
“I wish water toilets were used so the students would learn how to use them and better manage them.”- Male, School

“… [toilets] are often dirty. Sometimes you find people have defecated on the ground around the toilet and you cannot use.”- Female, Market
LACK OF SOAP

• Soap was only found in 2/5 paying toilets
• Not found in any of the free of charge toilets
• Soap often reported stolen
“...There is no soap. We have to improvise.”
- Female, School
PUBLIC SATISFACTION

• Public’s main concerns
  • Latrine misuse and management
  • Inadequate numbers of latrines
  • Waste management
Hygiene and Sanitation Assessment of Public Sites

All of the sites visited had handwashing facilities. Only 2 out of 10 sites had soap available.

- **Flush toilets**: 70% were found to be clean
- **Pit latrines**: 0% were found to be clean

If customers were taught how to use flush toilets, these would require less management.

*E. coli* and other diarrhea and disease-causing bacteria from faeces were found in:

- Markets
- Transportation centers
- Medical facilities

These bacteria can be killed with soap!

**USER SATISFACTION**

- **Market 4**: Satisfied
- **Medical Facility 1**: Somewhat Satisfied
- **School 2**: Unsatisfied
- **Market 2**: Satisfied
- **Market 3**: Satisfied
- **Transportation Center**: Unsatisfied
- **Market 1**: Satisfied
- **School 1**: Satisfied
- **Grocery Store**: Satisfied
- **Medical Facility 2**: Satisfied

![Picture sourced from www.thenounproject.com](https://www.thenounproject.com)
RESEARCH LIMITATIONS

• Timing
• Limited number of interviewees at schools and health facilities
• Skepticism of being swabbed
• Being denied access to swabbing & interviews at particular sites
• Language used in interviews
SUGGESTIONS FOR FURTHER RESEARCH

• City management vs. Private management
  • Cost/benefit analysis
  • Which type of facilities are cleaner, better cared for, and used most?

• Collection of samples and interviews
  • Pilot study potential
  • Timing: how does it affect the data collected?
Education on proper use of different latrine technologies
POLICY RECOMMENDATIONS

- Encourage soap use
- Awareness campaigns
- Increase the capacity of organizations
- Increased supervision of public toilets
POLICY RECOMMENDATIONS

• If possible, for future toilet construction projects, offer more than one type of toilet

• Discounts for frequent users of public toilets and tax paying vendors
THANK YOU!