

INNOVATING SOLID WASTE MANAGEMENT: BEHAVIORAL SHIFTS AND SYSTEMIC IMPROVEMENTS IN KHULNA CITY

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Keywords: Solid waste management, Behaviour Change Intervention, Urban Sanitation, Waste Segregation, and safe disposal.

ABSTRACT

The critical behavioral and systemic challenges of solid waste management (SWM) in Khulna City Corporation, focusing on waste segregation, storage, and disposal practices. Using a mixed-methods approach, the research collected data from 465 households and key stakeholders across planned and unplanned areas. The findings reveal significant gaps, including a lack of awareness of proper SWM practices, unsafe disposal methods, and insufficient storage infrastructure. The study emphasizes the role of behavior change communication (BCC) strategies in promoting sustainable practices through tailored interventions such as interpersonal communication and media campaigns. The research underscores the urgent need to integrate community engagement with infrastructural upgrades to address these challenges. By identifying behavioral motivators and barriers, the study provides a foundation for designing targeted interventions that can transform SWM practices in urban settings, contributing to improved public health and environmental sustainability.

INTRODUCTION

Khulna City Corporation (KCC), a rapidly growing urban region in Bangladesh, faces pressing challenges in managing municipal solid waste (MSW). Rapid urbanization has led to increased waste generation, which, coupled with inadequate infrastructure and inefficiencies, has created significant environmental and public health concerns. Behavioral patterns such as poor waste segregation, unsafe storage, and improper disposal exacerbate these challenges, leading to pollution, clogged drainage systems, and unsanitary conditions.

The current SWM systems in Khulna are constrained by deep-seated behavioral norms and limited public awareness. Practices like open dumping and neglecting segregation highlight a critical gap between policy implementation and community participation. These challenges underscore the need for a dual approach: fostering behavioral change and enhancing systemic infrastructure.

This study employs a Behavior Change Communication (BCC) framework to identify key behavioral determinants and implement targeted interventions. By addressing motivators such as convenience and social affiliation, and by incorporating infrastructural improvements like better storage solutions and waste collection mechanisms, the research aims to promote sustainable SWM practices.

Focusing on bridging behavioral insights with practical interventions, this research offers actionable recommendations to improve waste management in Khulna. Through an integrated approach, the study aspires to contribute to a cleaner urban environment and better public health outcomes, while supporting broader sustainability goals.

RESEARCH OBJECTIVES

The objectives of this study are to

1. Identify waste management practices and behavioral determinants in Khulna City Corporation.
2. Develop evidence-based BCC interventions to improve waste management practices.

METHODOLOGY

A mixed-methods approach was adopted, incorporating qualitative and quantitative data collection tools. Key methods included

- **Qualitative:** In-depth interviews, focus group discussions, and key informant interviews to explore attitudes, motivations, and systemic barriers.
- **Quantitative:** Household surveys covering 465 premises across planned and unplanned areas of KCC to assess knowledge, practices, and access to infrastructure.

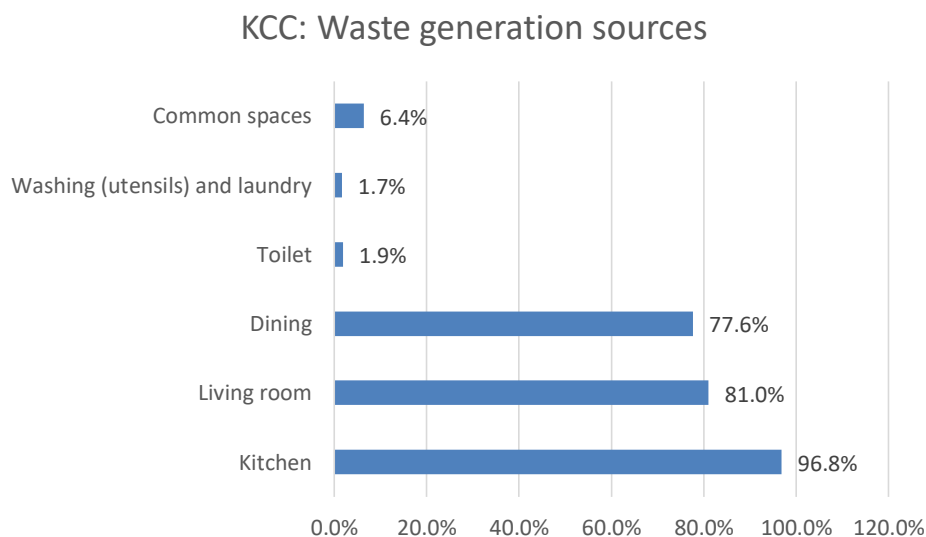


Figure 1 Waste generation sources in Khulna City Corporation

RESULTS AND DISCUSSION

Findings reveal significant gaps in SWM practices, indicating areas where targeted interventions are needed. Approximately 62.3% of households lack any form of waste management, leading to unsafe disposal practices such as dumping in drains and open spaces. This significantly contributes to environmental pollution and public health risks. The motivator of "disgust" can be effectively utilized here; campaigns highlighting the visible and olfactory impacts of such practices could drive aversion to unsafe disposal and encourage better habits.

For households practicing Solid Waste Storage Without Littering (21.5%), efforts are limited to basic containment without proper disposal or regular collection. Here, "affiliation" can serve as a powerful motivator. Social campaigns could emphasize community pride and collective responsibility for clean neighborhoods, leveraging affiliation to encourage the adoption of safe and systematic disposal methods.

Only 16.2% of households practice safe storage combined with regular waste collection, showcasing limited access to efficient waste management services. The motivator of "disgust" can be reinforced in interventions, such as educational programs and visual campaigns showing the consequences of unsafe practices on urban cleanliness and public health.

Currently, no households have achieved improved or safely managed disposal methods, reflecting gaps in advanced waste management infrastructure and behavioral adoption. To address this, integrating motivators like "status" and "affiliation" can be beneficial. For example, promoting clean waste practices as a marker of social responsibility and community standing can drive broader

behavioral shifts.

Actionable interventions include tailored Behavior Change Communication (BCC) strategies such as interpersonal communication (IPC), media campaigns, and community workshops. Additionally, infrastructural upgrades like color-coded bins and consistent waste collection schedules are critical for supporting these behavioral changes. By aligning motivators with practical solutions, the pathway to sustainable SWM becomes attainable, benefiting both public health and environmental quality.

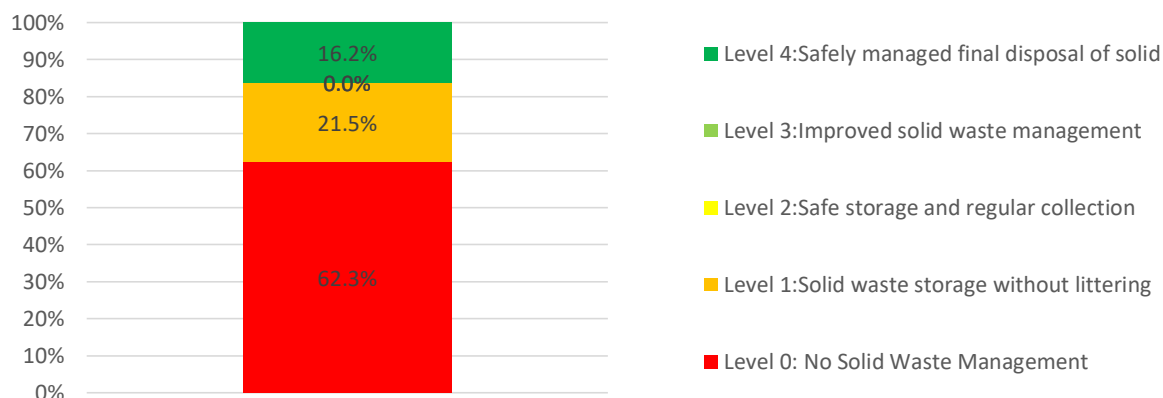


Figure 2 Solid Waste Management Scenario in Khulna City Corporation

Extent Of Feeling To Human Motives In SWM Context

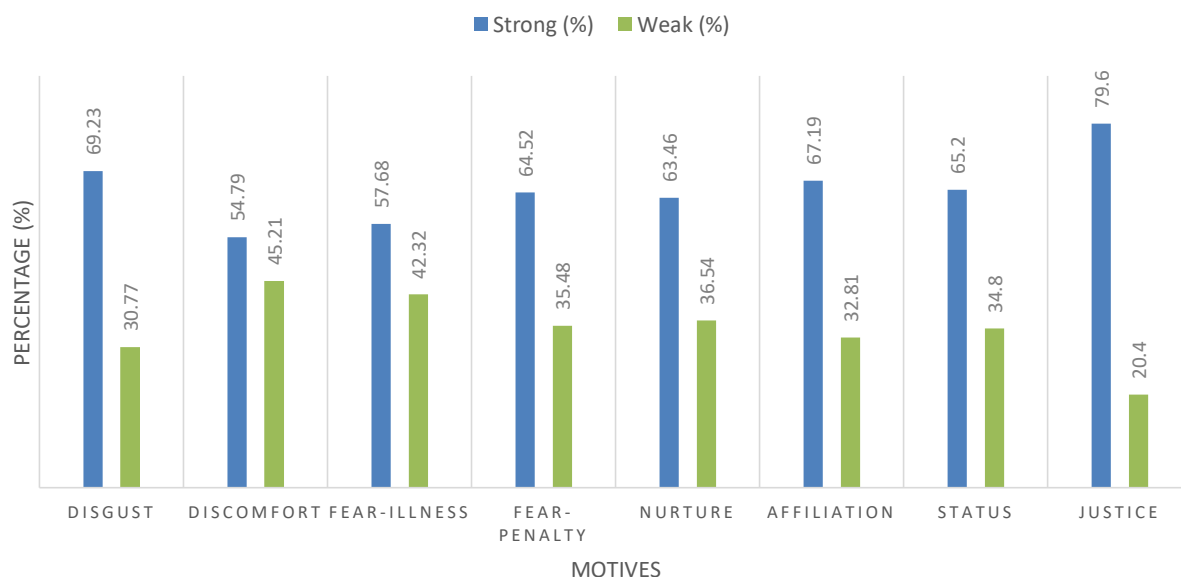


Figure 3 Human motives in the Solid waste management context

RECOMMENDATIONS

The study highlights the critical role of BCC strategies in addressing behavioral and systemic challenges. Key recommendations include

- Implementing tailored BCC interventions, such as IPC and media campaigns, to raise awareness.
- Enhancing community engagement through workshops and local leadership involvement.

- Strengthening infrastructure by introducing color-coded bins and enforcing waste segregation laws.
- Leveraging behavioral motivators like disgust, affiliation, and convenience to drive sustainable changes.

LIMITATIONS OF THE STUDY

While this study provides valuable insights into waste management behaviors, it needs future research incorporating real-time observational methods to deepen understanding of habitual practices. The focus on Khulna City Corporation, while offering rich local context, limits generalizability; expanding the scope to other regions would enable comparative analysis and broader applicability. Additionally, the cross-sectional design captures a snapshot of current practices but does not evaluate the long-term impact of interventions. Longitudinal studies could address this gap, providing insights into the sustainability and effectiveness of behavioral changes over time.

CONCLUSION

Effective SWM in Khulna City Corporation requires a dual approach: fostering behavioral shifts through BCC and addressing systemic gaps in infrastructure and governance. This integrated strategy can ensure cleaner urban environments, improved public health, and alignment with sustainable development goals.

ACKNOWLEDGMENT

The authors express gratitude to SNV Netherlands Development Organisation and Khulna City Corporation for their support in conducting this research. Special thanks to the households and stakeholders who participated in the study.

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