A Qualitative Survey of Trash Disposal in Rural Honduran Communities

Heather A. Burrell1*, Kun-Wei Song1*, Dennis A. Clements1,2

1Duke University School of Medicine, Durham, North Carolina, USA
2Duke Global Health Institute, Durham, North Carolina, USA

* Equal contribution

Correspondence to: Dennis Clements, Duke Global Health Institute, Trent 116, 310 Trent Dr., Durham, North Carolina 27710, USA. Email: dennis.clements@duke.edu

ABSTRACT

Background: Honduras is one of the poorest nations in the western hemisphere. Traditional waste products have been organic and biodegradable. Due to Westernization, rural Honduran communities are facing an accumulation of non-biodegradable trash, which these communities lack the infrastructure to dispose of properly. The goal of our qualitative survey was to determine the attitudes of rural Honduran communities regarding their current waste, their methods of managing waste and what future steps may improve the situation.

Methods: We interviewed 59 adult members of rural Honduras villages using an oral questionnaire consisting of 9 items.

Results: The predominant methods of waste disposal were burning plastic (89%), burning paper (82%), selling cans (80%), burying glass (77%), and burying (38%) or collecting organic waste at a distance (52%). Community members considered the main negative impact of trash was illness (70%). Over 90% of individuals surveyed indicated they approved of changing the amount of trash in the community, but seemed unsure of how to implement the change. The two most recommended future steps included having the entire community help with trash cleanup (29%) and an organized cleanup committee (16%).

Conclusion: By understanding current practices and attitudes, sustainable methods of improving the waste disposal situation can hopefully be implemented in future projects.


© The Authors 2016. All rights reserved, JPHDC.
INTRODUCTION

Honduras is a developing nation and second poorest in the Western hemisphere after Haiti \[1\]. In developing countries, such as Honduras, management of trash disposal is often lacking \[2\]-\[4\]. Unregulated waste disposal has negative impacts on the environment and health of local residents \[3\],\[5\]-\[7\]. While research in developing countries has primarily focused on urban environments \[8\], few studies have measured the burden of waste in rural areas.

This is the first report on attitudes toward the trash burden in rural Honduras. Traditionally, these agricultural communities produced organic and biodegradable waste. Therefore, the villages have had little need for a trash disposal system. However, due to Westernization in the developing world, Honduras has seen an increase in westernized products, leading to an increase in the amount of non-biodegradable waste that is building up in the communities \[9\]. However, these communities lack the infrastructure to manage waste disposal.

The goal of our qualitative survey was to determine the attitudes of rural Honduran communities regarding their current waste, their methods of managing waste, and what future steps may improve the situation.

MATERIALS AND METHODS

Study Participants and Settings

A convenience sample of 60 adult residents of rural Honduran communities was interviewed between March 26 and April 5, 2014. Forty-seven were residents of the communities of Las Mercedes, Belén, Liquidamba, Río Colorado, El Cacao, San Nicolás, Río Grande, Las Crucitas, and Rosario. Each community consists of approximately 300-400 residents. One interview was discarded after the study staff was informed that the subject was intoxicated. Interviews were conducted at the health clinic in Las Mercedes. An additional 13 adults from the Chorti village of Choncó, Copán were interviewed at the health clinic. This community consists of approximately 190 people.

Survey

A questionnaire was administered in Spanish by one member of the study staff (HAB). The questionnaire consisted of 9 items that assessed participants’ trash disposal practices and opinions on trash disposal in their communities. No personally identifiable information was gathered.

Ethical Considerations

An exemption was obtained from the Duke University Health System Institutional Review Board. Oral consent to participate in the study was obtained from all participants.

Data Analysis

Microsoft Excel was used for data compilation and analysis.

RESULTS

Disposal Methods of Collected Trash

Responses by the communities of Intibucá and Choncó were combined for statistical power. All participants denied previous participation in the study. Community members’ collected trash was mostly disposed using a combination of burning, burying or collection away from their houses (Figure 1). Community members used varying methods to deal with each type of trash. Types of trash included plastic, paper, cans, glass and organic products. The predominant methods used were burning plastic (89%), burning paper (82%), selling cans (80%), burying glass (77%), and burying (38%) or collecting organic waste at a distance (52%) as shown in Figure 2.

Temporal Changes in the Trash Status

Regarding awareness of changes in the trash status of the community within the last 5 years, 76% participants noticed less trash. Furthermore, regarding changes in the type of trash, 20% of participants did not perceive any
change. Forty-two percent of community members noticed an increase in plastic trash, 17% noticed an increase in paper trash, 15% noticed an increase in cans, 1.7% noticed an increase in glass trash, and 1.7% noticed an increase in organic products as highlighted in Figure 3.

Perceived Effects of Trash Accumulation

When surveyed about their desire to change trash status in the community, 93% of participants responded positively to wanting to change amount of trash in the community. Similarly 97% confirmed that trash was affecting their daily lives. Sixty-seven percent said that
Figure 3: Responses to changes in amount of plastic, paper, cans, glass and organic trash. Number of responses for each type of trash, plastic paper, cans, glass and organic products are shown. Blue bars represent participants who responded they have noticed less trash of that type and orange bars represents participants who responded with noticing more trash. Non-responders are not shown.

Figure 4: Perceived effects of trash accumulation on daily life. Majority (67%) believed that trash causes illness. In terms of how trash affects their daily life, many participants provided multiple responses, which totaled 67 responses. Sixty-seven percent said that trash caused illness, 10% said trash affected the environment, 9% said trash looked ugly, 4.5% said trash smelled bad, 1.5% said trash collects water, and 4.5% did not respond.
trash caused illness. Other responses on the effect of trash included: affected the environment (10%), looked ugly/eyesore (9%), smelled bad (4.5%), and collected water (1.5%). Three participants (4.5%) did not respond (Figure 4). In regards to what illnesses were caused by the trash, we collected 36 responses from 31 participants. Fifty-eight percent said flies, 33% indicated a specific disease such as dengue, 5.6% indicated dust, and 2.8% indicated smoke from the burning trash.

**Participants’ Views on Changing Trash Situation**

Participants responded with a total of 93 recommendations for change in the amount of trash in the community. The two most supported responses were having the entire community contribute (29%) and an organized cleaning organization (16%). Other answers included: increased regulation (9.7%), no littering (8.6%), increase education (7.5%), increased frequency of trash cleanup (6.5%), subset of community designated for trash cleanup (5.4%), more trash cans (4.3%), cleaning their own house (4.3%), centralized location for trash (3.2%), less plastic waste (2.2%), and an incentive program (1.2%). Three participants (3.2%) did not respond.

**DISCUSSION**

Despite the increasing burden of non-biodegradable trash on rural Honduran communities, only a few studies have been conducted to assess the impact of waste accumulation on the communities of developing countries. Thus, our study sought to conduct a preliminary survey of disposal practices and attitudes towards its accumulation and disposal. Plastic waste in the communities predominantly consists of plastic bottles and snack packages. Although burning plastics and paper is effective for disposal, there is concern about the negative health and environmental impacts of smoke and by-products of incineration [10]. Since household incineration is on a small scale, the environmental impact may be negligible. The health effects can likely be mitigated by sharing responsibility among multiple household members so that one member is not consistently exposed. This is a possible venue for further preventative health education in the future.

An incentive program to promote recycling of materials such as plastic, paper, and glass could help reduce waste. Programs may include a monetary reward or projects such as the University of North Carolina at Chapel Hill Trash is Cash program in Kibera, Kenya, where trash is sorted and used as resources for crafting or is recycled. Glass could also be a major focus of recycling efforts in the future, as it is currently most commonly disposed through burying. Some measures for trash collection are currently in place, such as the mandate from the Health Committee of Honduras enacted 2 years ago, the Water Committee collecting trash in Las Mercedes, and trash collection efforts in the Chorti village. However, individuals have not noticed a change in the trash of the community. Most noticeably, responses indicate an increase in plastic waste, a decrease in paper and glass, and similar level of cans and organic products (Figure 3). These show that the major types of waste to target may be plastic and cans. Another venue is the corporations that produce these items. Production of biodegradable plastics in this context would greatly benefit the communities as they are equipped traditionally to manage biodegradable waste.

Individuals in the community do perceive negative impacts of waste accumulation. Illness is the most common response, followed by the environmental effects, being visually unappealing, smelling bad and collecting water (Figure 4). One individual mentioned the negative health impacts of smoke from trash incineration, which may also be a future target. The most commonly endorsed options to reduce waste in the community were involvement of the entire community or an organized cleanup committee. While the entire community helping out is most widely suggested, no definite methods were suggested. Implementation of other measures such as tighter regulations on littering, more trash cans, and increased education may help promote awareness in the entire community and motivate individuals to contribute.

This study provides a glimpse into the practices and opinions on trash of members of rural Honduran communities, but has clear limitations. One challenge throughout the study
was getting complete answers from participants, who were wary of the foreign investigators. Another limitation of the data arises from the lack of demographic data. While not collecting any personal information protects participants, it also limits conclusions that can be drawn from the data. As a result, we cannot separate trash disposal practices by community or gender with our current data. Further research is needed to learn more about the trash disposal practices in rural Honduran communities. Given the limitations of the current study, future qualitative studies should strive to employ questions with binary responses, which would improve the accuracy of the data and minimize the non-response rate. Future studies should seek to quantify the amount of trash in the communities to: a) be monitored over time, b) correlated with participant responses, and c) used to track the effects of interventions to reduce the amount of trash in the community. Potential next steps are to propose interventions to reduce trash in the community based on the survey responses and strategies that have proven successful in other countries, such as the Trash Is Cash program or increasing recycling.

CONCLUSION

By understanding current waste disposal practices and attitudes, sustainable and safer methods of improving the waste disposal situation can hopefully be implemented in future projects.

AUTHORS’ CONTRIBUTIONS

HAB and KS designed questionnaire on waste disposal practices and opinions. HAB administered questionnaire and compiled data. KS analyzed data. DC oversaw conduct of the study and manuscript preparation. All authors have read and approved the final manuscript.

ACKNOWLEDGEMENTS

We would like to thank Rosa Solorzano, Penny Cooper, and Midge Bowers, along with the Duke University School of Medicine and School of Nursing for their support.

CONFLICT OF INTEREST

Authors have declared that no competing interests exist.

REFERENCES


9. Wheeler KG. Sugar Consumption and Prevalence of Dental Decay among Children 12-Years of Age and Younger in Rural Honduras. 2011. (Master of Science), Duke University, Durham, NC.