

Can collective action strategies motivate behavior change to reduce open defecation in rural India?

Payal Hathi

research institute for compassionate economics (r.i.c.e.)

Dean Spears

Economics and Planning Unit, Indian Statistical Institute, Delhi; Woodrow Wilson School of Public and International Affairs at Princeton University; r.i.c.e.

Diane Coffey

Economics and Planning Unit, Indian Statistical Institute, Delhi; Woodrow Wilson School of Public and International Affairs at Princeton University; r.i.c.e.

Abstract

The world's remaining open defecation is increasingly concentrated in rural India. The Indian government's efforts to reduce open defecation by providing subsidies for latrine construction have been largely unsuccessful in addressing the problem. It is now clear that behavior change must be the priority if progress on ending open defecation is to be made. While community-led strategies have proven effective in various developing country contexts, there are serious reasons to question whether similar methods can work in rural India. Through both quantitative and qualitative analyses, we find that strict social hierarchies that continue to govern daily interactions in rural life today obstruct the spirit of cooperation upon which such methods rely. Additionally, caste-based notions of purity and pollution make the simple latrines used all over the developing world unattractive to rural Indians. In a context where people identify most closely with their caste and religious groups rather than their geographical villages, our findings suggest that a more nuanced understanding of the idea of "community" is required. More experimentation, both with community-led and other strategies, is needed in order to effectively move from open defecation to latrine use in rural India.

Introduction

61 million children in India, or 48% of children under the age of 5, suffer from moderate or severe stunting (UNICEF 2012), which can result in long-term cognitive deficits, poorer school performance, fewer years of completed schooling, and lower adult productivity (UNICEF, Dillingham & Guerrant 2004) as well as increased risk of infections and higher mortality rates (Waterlow 1991, Bozzoli, Deaton & Quintana-Domeque 2009). Accumulating evidence suggests that open defecation is an important cause of stunting in rural India, as the fecal germs that children ingest make them sick and prevent them from reaching their growth potential.

Given the dire consequences of open defecation on the health and human capital of children and populations as a whole, the Indian government has rightly recognized the speedy elimination of open defecation as a top public priority. Close to 1 billion people in the world still practice open defecation; close to 60 percent of them live in India (UNICEF and WHO 2015). This means that most people in the world who defecate in the open live in India. In India, the 2011 Census found that 53% of households did not own a latrine (Census 2012). As more and more countries have made advancements in reaching their sanitation goals, the world's open defecation is increasingly concentrated in rural India, where progress towards eliminating open defecation has been abysmally slow. This stands in sharp contrast to the fact that various government sanitation programs have provided tens of millions of households with subsidies for latrine construction since 1986 (Government of India 1993). Despite these vast resources and India's strong economic growth, the problem of open defecation stubbornly persists in rural India, demanding critical reflection about why such large scale efforts have had such limited success.

Traditional explanations for why open defecation remains so high in India do not hold up to the data. Poverty cannot explain the lack of sanitation as many households who can afford to build toilets in India do not do so. Comparing across other developing countries using UNICEF/WHO and World Bank data, 46 of 55 countries poorer than India have a smaller fraction of the population defecating in the open. Similarly, education cannot explain the problem, as 23 of the 28 countries with lower literacy rates than India have less open defecation. And lastly, a lack of water cannot explain such high rates of open defecation as 90 percent of rural Indians have access to an improved source of drinking water (Spears 2014).

Recent research from India sheds light on some of the reasons why mass toilet construction campaigns have not been able to solve India's open defecation challenge. Coffey et al. (2014) find that in rural India, many individuals in households with functioning latrines continue to defecate in the open, and that it is commonly believed that open defecation is healthier than using a latrine. Access alone, therefore, cannot be the main problem. In a companion study, Coffey et al. (2015) show that societal notions about purity and pollution, which like in many societies around the world are used to express ideas about social order (Douglas 1966), uniquely intersect with deep-seated caste dynamics to affect everyday sanitation practices. Historical associations between low-caste people and latrine pit emptying work, which continue to plague certain caste communities even today (Human Rights Watch 2014), make simple pit latrines that require frequent emptying unattractive to rural Indians (Dyalchand, Khale & Vasudevan 2011).

The latrines that the government builds for households in the hopes of increasing access to sanitation are indeed pit latrines that require emptying. These are the same latrines that are recommended by the World Health Organization (WHO 1996) and that are used all over the developing world: according to Demographic and Health Surveys (DHS) conducted in various countries, only 42% of rural Indian households that have a latrine use pit latrines (these include flush to pit latrines, ventilated improved pit latrines, pit latrines with a slab, and pit latrines without a slab) (2005), in contrast to 94% of rural households in Bangladesh that have a latrine (2012) and 90% of rural households in Nigeria (2008). The reason that these latrines are relatively uncommon in rural India is because there is so little demand for

them, in large part because of the stigma and discrimination associated with handling feces (Gatade 2015), leading to a collective norm that latrines should have large, expensive septic tanks. In the face of community pressure, poor families who cannot afford expensive latrines simply delay adoption of toilets entirely (Dyalchand, Khale & Vasudevan 2011). This aversion to affordable latrines, combined with a lack of awareness about the health implications of open defecation, leads to a rejection of affordable latrines.

These findings make it clear that the construction of latrines alone will not sufficiently address India's sanitation crisis. Instead, it will be critical to change people's attitudes about the importance of latrine use. Recent changes in Indian sanitation policy do in fact indicate a greater focus, at least on paper, on promoting behavior change (Government of India 2014), but *how* to effectively achieve behavior change remains an open question.

One strategy, widely credited with contributing to the reduction of open defecation in developing countries other than India, is Community-Led Total Sanitation, or CLTS. CLTS aims to convince people to use latrines by motivating collective action: facilitators help communities come together to assess the extent of open defecation around them, understand its negative health impacts, and then trigger the desire to work cooperatively to provide support and find appropriate local solutions to become open defecation-free (CLTS Knowledge Hub 2011). The method is premised on the idea that members of a community will be willing to alter their behavior for the good of those around them.

CLTS is often written and spoken about as though triggering a community and social pressure are the only elements needed to make the method work (Kumar & Shukla 2011). In current government policy documents, the emphasis remains on *gram panchayat*, or village, level efforts to change behavior, assuming that a village is a single community (Government of India 2014). While there is growing recognition that CLTS works better in smaller, unified, and homogenous communities (GWASH 2013, Mahbub 2011), some researchers do recognize that "CLTS discourses draw on a rather idealized notion of 'community' which in reality may be conflict-ridden and moulded by gender, power, and patron/client relations and inequalities" (Mehta 2011). As called for in Cavill, Chambers, and Vernon's 2015 overview of CLTS and its sustainability, there is a great need to learn more about "the approaches, complexities, and subtleties in transforming and sustaining changes in social norms, especially in heterogeneous and socially divided communities." We hope this paper contributes to that need.

CLTS is an important model for Indian policy makers to consider because of its emphasis on behavior change. Although CLTS is not explicitly mentioned as the official government approach to national sanitation policy in India, the behavior change components of government sanitation programs have essentially been designed based on CLTS principles, recognizing the need for total sanitation to be "people-centered and community-led" and emphasizing demand creation through awareness building (Kumar 2010, Kumar & Shukla 2011). While a small-scale study in Orissa showed positive results of CLTS methods in increasing latrine use (Pattanayak et al 2009), a larger scale study of the government's TSC roll-out in Madhya Pradesh showed that less than half of intervention villages in the study actually received CLTS activities as planned (Patil et al 2014). Thus, CLTS has yet to be widely accepted or tried in

the country (Sanan 2011) because India's heavy emphasis on latrine construction has come at the expense of serious efforts to convince people to use them.

Indeed, in an account of the development and functioning of India's 1999 Total Sanitation Campaign (TSC), the basis for subsequent sanitation policy, Indian Administrative Services officer Alok Kumar provides an insider perspective of the ethos of sanitation policy in India. Kumar reflects on how a lack of enthusiasm for and ability to conduct massive social mobilization drives for sanitation promotion led many states to push for the "easy escape route" of higher and higher subsidies for toilet construction. He also suggests that in places where CLTS has been tried, it has largely been done without taking into account the socio-cultural and economic background of the community. Given new rhetoric around the importance of latrine use, as well as a recent global study questioning the effectiveness of CLTS methods in changing people's sanitation behaviors (Plan International and UNC Water Institute 2012), this is the right time to reflect on whether community-led strategies are likely to be effective in changing behavior and eliminating open defecation in the Indian context.

This paper will explore whether conflict within Indian villages can explain variation in rates of rural open defecation, as a way to understand why open defecation in India has stayed so stubbornly high. Because of the depth of social fragmentation and the continued negotiation of caste-based oppression in rural India, the geographic "communities" envisioned by common policy narratives may not be a useful way to organize group-level motivation for the purposes of changing sanitation behavior. The remaining sections of the paper are as follows: the background section provides context about sources of social conflict in Indian villages, reviews the literature on the relationship between social fragmentation and collective action, and describes government's oversimplified policies for behavior change. The data and methods section describes the quantitative and qualitative datasets used for this study, as well as the methods we use to analyze the data. The results section explains the correlation we see between perceptions of village conflict (both general and caste-based) and open defecation. Additionally, through the words of respondents in rural Uttar Pradesh, we present an explanation of caste hierarchy as a mechanism that links conflict and open defecation. We conclude with a discussion of whether popular methods for encouraging latrine use that rely on neighbors to collaborate can be effective in a context like rural India, in which deep, historical social divisions continue to govern interactions in daily life. While others have recognized that CLTS is more effective in smaller, homogenous communities, no other study that we know of has studied the specific relationship between open defecation reduction and community conflict either in a large dataset or through in depth qualitative interviews.

Background

Conflict, collective action, and social fragmentation in Indian villages

Methods like CLTS that seek to eliminate open defecation rely on community-level cooperation. But in rural India, where villages can be quite diverse, social fragmentation along dimensions of religion, caste, age, and sex make it difficult for people within villages to identify with one another and see each other as a cohesive unit working together to solve common problems. Hinduism, followed by 80 percent of Indians, categorizes people into ranked castes into which they are born. Caste is widely recognized as

an important part of social and economic life in rural villages. Those in the lowest castes, known as untouchables or Dalits, are seen as impure and polluted, and are extremely marginalized and oppressed. This oppression is often justified based on the work that people from these castes have traditionally been expected to do for higher caste households, such as cleaning feces, menstrual clothing, child birth remains, dead animals, and other things considered impure (Milner, 1987, Shah, et al. 2006). Any work that deals with feces, whether emptying pits or other forms of cleaning feces, is considered the most degrading kind of “cleaning work” or “untouchable work.” Individuals are more likely to identify with the caste or religious group to which they belong, rather than the village as a whole. Therefore, when we think about “community-based” interventions in India, it is important to have a nuanced and localized understanding of the term “community.”

Many scholars have described the fragmentation in Indian villages, which may make collective action in Indian villages problematic. Indian sociologist M.N. Srinivas describes both the innumerable hierarchies present in a village in Karnataka in the late 1940s, as well as the caste-based competition for resources within the village and from outside (1976). Indian political activist and scholar Dr. B.R. Ambedkar (1956) explains that the “caste system has [the] most pernicious consequences. It destroys willing and helpful co-operation.” In another essay (1936), he writes that “[c]aste has killed public spirit. Caste has destroyed the sense of public charity... A Hindu's public is his caste. His responsibility is only to his caste. His loyalty is restricted only to his caste.”

Caste remains important in village life today. Contemporary scholars also describe how hierarchies in Indian villages hinder cooperation: many economists describe the association between caste heterogeneity and less access to water and other public resources in rural India (Balasubramaniam et al. (2011), Bros and Couttenier (2010), Anderson 2010)). Political scientist Daniel Aldrich (2011) describes how marginalized groups in rural Tamil Nadu, such as women, Dalits, and Muslims, faced difficulties in accessing aid after the 2004 Indian Ocean tsunami because they were pushed out even further from social safety nets by more powerful village groups. In a 2001-2002 survey of 565 villages across 11 states in India, Shah, et al. (2006) document current-day forms of untouchability including denied access to restaurants and water sources, denied entrance into police stations and places of worship, separate utensils in restaurants, denied work as agricultural labor or selling in local markets, and prohibitions against food sharing, among many others, demonstrating the strong shadow that casteism still casts over the sharing of common resources.

Even outside of India, there is a large literature on the negative effects of social fragmentation on the provision of public goods, and how people are more likely to cooperate with those who they perceive to be similar to themselves. In the United States, Alesina, Baqir, and Easterly (1999) find that the more ethnic diversity in their sample of American cities, the worse the provision and funding for public goods like roads, schools, trash pickup, and libraries, in part because different groups have different preferences over how funds are spent. Miguel and Gugerty (2004) demonstrate how ethnic diversity makes it difficult to impose social sanctions, leading to less funding for and maintenance of schools in western Kenya. Similarly, in his study of peer lending groups in Peru, Karlan (2007) finds that social networks and relationships can be a strong force, and that individuals who “are more culturally similar

to others in the group are more likely to repay their loans and save more” because they are better able to monitor and enforce loan repayment. And Vigdor (2004) demonstrates how social mindedness may only extend to the people considered similar to oneself, and that ethnic groups sometimes care more about an outcome if it will benefit their group rather than other groups. If these processes, which are found worldwide, have a particularly strong expression in the caste divisions of Indian villages, then CLTS or any program based on cooperation may face special challenges.

Can collective action be a solution for poor sanitation in India?

There are several ways in which collective action, made more likely by social cohesion, may be important for reducing open defecation in India. Although latrines are individual household property, the perceived importance and urgency of investing in sanitation may be highly influenced by an understanding of the externalities of open defecation: an individual may value ownership and use of a latrine more highly if she cares about the costs of her open defecation on the health of her neighbors, and value it far less if her neighbors are people who she does not consider a part of her own “community.” Further, in practice, households have been more successful in securing government subsidies for latrine construction from India’s government sanitation program when many households come together to demand that latrines be built. Finally, CLTS and similar methods appeal to collective pride and responsibility to encourage households to adopt latrines (Mehta 2011).

Government’s simplification of behavior change strategies

Current government sanitation programs recognize on paper that toilet construction is not enough, but policies suggest that simple awareness building in village communities will be sufficient to change behavior. Government claims of achieving 100 percent sanitation coverage by 2015 (Kumar 2010) exemplify the expectation that government programming would be able to address India’s sanitation challenges. Kumar shows that there does exist a recognition that demand for latrines is at the heart of the matter, and that low-cost latrines were never desirable, stating explicitly that “it has been very frequently heard from the PHED officials as well as political representatives that people are not willing to construct low-cost toilets” and that “the prevailing belief [is] that only septic tank toilets were effective and sanitary ones.”

Despite this awareness of the aversion to low-cost latrines, government policy discussions fail to address the deeper connections people make between using pit latrines and caste stigma. The importance of sanitation and purity in ancient Indian culture is often extolled (Kumar 2010), leaving out how certain castes were traditionally forced into cleaning occupations, including the cleaning of excreta, thus labeled unclean and impure and relegated to the bottom rungs of society (Bathran 2011, Gatade 2015). While government action may not be able to immediately address deep-seated caste-based fragmentation in Indian society, sanitation policy would almost certainly be improved by reflecting on how such fragmentation may impact current strategies for behavior change (Spears & Lamba 2013), and incorporating the challenges that rise due to casteist notions of purity that obstruct the adoption of affordable latrines.

Data and Methods

Data and summary statistics

This paper analyzes both a quantitative dataset as well as in-depth, semi-structured qualitative interviews. The quantitative dataset asks about open defecation practices at the household level, and conflict, both general and caste-based, within the household's village. The qualitative dataset explores various dimensions of caste relationships and motivations for sanitation behavior in rural India.

India Human Development Survey (IHDS), 2005

The India Human Development Survey (IHDS) is a nationally representative social, economic, and demographic survey of over 41,000 households. We use data only from rural households, giving us a sample size of approximately 26,500. Of these households, 48% report either some or a lot of conflict in their village, and 33% report either some or a lot of conflict between castes. 72% of rural households defecate in the open. More recent data, such as the 2011 Census, similarly measure 67% rural open defecation. This less than half a percentage point decrease per year suggests that large-scale government sanitation programming has largely been unsuccessful. Specific questions used for analysis are shown in Table 1.

Table 1. IHDS questions used for analysis (2005)

Topic	Question	Answer options	Results
Social unity/ general conflict at the village level	In this village/neighborhood, do people generally get along with each other or is there some conflict or a lot of conflict? (asked to respondent in each surveyed household)	lot of conflict, some conflict, or get along	See Figure 1, Figure 2, Figure 3 in text, Table 2 at www.riceinstitute.org , and 'Quantitative Results' section in text.
Social unity/ caste conflict at the village level	In this village/neighborhood, how much conflict would you say there is among the communities/jatis [castes] that live here? (asked to respondent in each surveyed household)	lot of conflict, some conflict, not much conflict	See Table 3 at www.riceinstitute.org and 'Quantitative Results' section in text.
Open defecation at the household level	Does the household have a toilet of its own? Is there a flush toilet? A latrine? Or any other facility? (asked to respondent in each surveyed household)	no facility belonging to household (or open fields), traditional pit latrine, ventilated pit latrine, and flush toilet	See Figure 1, Figure 2, Figure 3 in text, Table 2 and Table 3 at www.riceinstitute.org , and 'Quantitative Results' section of text.

Exploring the relationship between caste and sanitation behavior in rural north India, 2015

Building from the qualitative research findings in Coffey et al. (2015), the r.i.c.e. research team conducted qualitative interviews with rural households in a district in Uttar Pradesh, in December 2014,

to explore how caste and religion impact sanitation beliefs and behaviors. A total of 23 in-depth, semi-structured, qualitative interviews were carried out in Muslim and Hindu households, and with both latrine users and non-users. The interviews covered topics such as the problems and benefits associated with defecating in the open or latrine use, the perceived costs of different kinds of latrines, an exploration of people's feelings about emptying latrine pits both themselves and having them emptied by others, perceptions of purity and pollution, feelings about interacting with low caste people, the activities appropriate for women in the household to engage in, and religion's impact on sanitation practices. Further information about methodology is available in a version of this paper at www.riceinstitute.org.

Methods

The main question of interest for this study is whether people who report more conflict in their village are more likely to defecate in the open than those who report less conflict. Therefore, we compare open defecation rates among those with differing perceptions of conflict within their village. We additionally explore the relationship between open defecation and caste-based conflict, to understand if this specific type of conflict is related to varying rates of open defecation. Technical details of these comparisons are included in a version of this paper at www.riceinstitute.org.

For the quantitative analysis, we use a simple linear regression model. We use OLS instead of logistic regressions even though our outcome variable is binary because OLS is more common in the social sciences like economics and political science, whereas logit is more common in epidemiology and the medical sciences. Results differ only slightly, and logit results are summarized in a version of this paper at www.riceinstitute.org. Our dependent variable is whether a household defecates in the open or not, and our independent variable is the level of conflict in the village (either general or caste-based), as reported by the household. We add in control variables in stages to rule out other plausible explanations for the relationship.

We focus on the association between open defecation and perceived intra-village conflict because, as has been described in other studies, the degree of social cohesion or conflict an individual experiences may influence her behavior, particularly in the case of behavior that impacts others nearby. This will have direct implications for what we can expect in terms of the effectiveness of community-led methods to motivate sanitation behavior change.

Results

Quantitative results

In the IHDS national data, we find that people who report that their village has "a lot of conflict" are more likely to defecate in the open than people who report that their village has "some conflict." They, in turn, are more likely to defecate in the open than people who report that people in their village "get along." Note that this question asks about general conflict, not necessarily based on any particular dimension.

In Figure 1 below, the vertical axis shows the average difference in household open defecation, relative to those who report that people in their village “get along.” The horizontal axis shows people who reported “some conflict” in their village on the left and people who reported “a lot of conflict” in their village on the right. Each bar represents the magnitude of the difference after accounting for additional factors that could influence the relationship. The left-most bar is the simple relationship between open defecation and conflict, the next bar is the same association accounting for the household’s own caste or religious group (categories here include five Hindu caste groups of Brahmin, High Caste, Other Backward Caste, Dalit, and Adivasi, and three other religious groups including Muslim, Sikh/Jain, and Christian), the next bar further accounts for the fraction of the village in each caste or religious group, the next bar further accounts for per capita consumption as a measure of wealth, and the right-most bar further accounts for the household’s geographical state. In each case, the association between conflict and open defecation is positive, meaning that households that perceive more conflict in their villages are more likely to practice open defecation.

Including all control variables, those households that report some conflict in their village are approximately 2.5 percentage points more likely to defecate in the open than those who report that people in their village get along, and those who report a lot of conflict in their village are approximately 5.6 percentage points more likely to defecate in the open than those who report that people in their village get along. These differences are statistically significant and remain steady regardless of which controls are included, thus we can be confident that they are not driven by wealth, the respondent's own caste, or other properties of the village. The same differences are also found within Indian states, suggesting that the result is not a spurious artifact of the state in which a village is located. See Table 2 in a version of this paper at www.riceinstitute.org for regression results.

Figure 1. People who report more conflict are more likely to defecate in the open (IHDS, 2005)

[Insert Figure 1 here]

The figures below depict the same trend: at all village sizes (Figure 2) and at essentially all levels of consumption (Figure 3), the average fraction of households defecating in the open is higher in places where people report more conflict.

Figure 2. People who report more conflict are more likely to defecate in the open, regardless of village size (IHDS, 2005)

[Insert Figure 2 here]

Figure 3. People who report more conflict are more likely to defecate in the open, regardless of wealth (IHDS, 2005)

[Insert Figure 3 here]

In addition to perceptions of general conflict, we also look at perceptions of caste-based conflict. By comparing open defecation rates among those with differing perceptions of caste-based conflict within their village, we are able to explore the association between sanitation behavior and a particularly important avenue of conflict in the rural Indian context. We find that, including all control variables, those households that report some caste conflict in their village are approximately 2.8 percentage points more likely to defecate in the open than those who report that there is not much caste conflict, and those who report a lot of caste conflict in their village are approximately 3.1 percentage points more likely to defecate in the open than those who report that there is not much caste conflict. These differences are statistically significant and remain steady regardless of which controls are included, thus we can be confident that they are not driven by wealth, the respondent's own caste, other properties of the village, or the state in which a village is located. See Table 3 in a version of this paper at www.riceinstitute.org for regression results.

Our analyses show that not only does conflict, both general and caste-based, indeed exist in today's Indian villages, but also that this conflict may be obstructing the collective action required to reduce open defecation. While the idea of harnessing community solidarity to change sanitation behavior seems attractive, the unique social reality of rural India may require either a less geographically-centered and more social group-centered understanding of "community," or may require altogether new tools for behavior change.

While the IHDS results allow us to draw statistical inferences at the national level about the relationship between general and caste-based conflict and open defecation, qualitative findings allow for more depth in understanding the mechanisms and processes that underlie these associations. We now turn to our qualitative results.

Qualitative results

Qualitative research undertaken by the r.i.c.e. research team sheds deeper light on conflict and the lack of community cohesion in Indian villages, largely along divisions of religion and caste, and how these divisions impact people's perceptions of latrine use. Many scholars have described how rules of purity and pollution dictate physical interactions between castes, and how these rules perpetuate centuries of social hierarchy. For example, a Dalit (low/untouchable caste) individual may be prohibited from entering a temple or a high caste home because he or she would be considered to pollute it. The sharing of food and water (including public water sources), which results in some of the most extreme degrees of pollution, continues to be one of the most common practices of untouchability. Indeed, the extent of caste discrimination can often be measured through the unwillingness of individuals to accept food or a drink of water from members of another caste (Srinivas 1976, Milner 1987, Banerjee et al. 2005, Bros 2010). We see precisely these expressions of social fragmentation from our respondents, in the instances described below.

Because concepts of purity govern the interactions of individuals of different castes, there are strict rules that dictate the sharing of utensils and dishes with those of lower castes. In speaking with a Muslim matriarch whose family does not own a latrine, about the people who empty latrine pits, she

describes that if they let a low caste person eat from their plates, they would not be able to take the plate back again. Instead they would feed a low caste person on a leaf or in a disposable plate to avoid any physical sharing. Even though these are groups that live in the same village, and probably see one another quite frequently, there is nevertheless considerable social distance, in attitude and in practice, among both Muslim and Hindu households of all castes:

“[We] can give the people who empty [latrine pits] water or something to drink when they come to [our] house, [we] would never refuse anyone water. [The cleaners] would bring their own utensils, [we] wouldn’t give them water in [our] glass. If they use [our] glass, [we] wouldn’t take the glass back in the household. It matters which community someone is from. [We] would never take food from Mehtars or Bhangis [Dalit caste groups]. If you are someone from the right community, you can eat at our house, in our dishes. But if you are someone from a community who can’t eat at our house, then we’ll give you food on a leaf or in a paper plate, but not in our dishes.”

A high caste Hindu family with a latrine describes how people of Dalit castes know that they cannot sit at the same level as those of higher castes, and that out of “respect”, they will sit lower. This again demonstrates the lack of equality, and the absence of a shared sense of “community” in the rural context.

“It’s not that the lower castes feel bad. Here, Brahmins [a high-caste group] are respected. Those of lower quality will not sit at equal par, they will sit down lower. We feel bad [if they sit on the same level as us]. We are Brahmin and they are of lower castes, so how will they sit equal to us? We will tell them where they can sit.”

Ironically, this high caste respondent presents an account of how low caste individuals feel about the social rules which relegate them to the bottom of the hierarchy. He asserts that there is an acceptance of the social order, and that there is nothing to feel bad about. While it is not actually the case that those who are oppressed never acutely feel and abhor their exploitation, these rules and strict hierarchies have indeed been internalized by individuals, regardless of their own caste. As a result, many people feel bound to follow social norms about behavior based on their caste membership.

Social hierarchy is not only seen in the relationships between Hindus and Muslims, or between low caste and high caste families. That such hierarchies have been internalized is made clear by the fact that the same practices are followed *within* low caste groups, subjecting the lowest sub-castes to discrimination from higher sub-castes. Within Dalits, there are several sub-castes, with the lowest sub-castes traditionally doing cleaning work like emptying latrine pits. The following quote is from a Dalit man who is from a Pasi family, a sub-caste that traditionally does pig rearing work, and is higher in the social hierarchy than the Mehtar sub-caste which traditionally deals with human excreta, and the Chamar sub-

caste which traditionally deals with animal carcasses. He describes how they would treat other Dalit people who are of a lower sub-caste than his family, comparing it to the way his own family would be treated by a higher caste family. When asked if he thinks this is the way things should be, he says that it is the way things are, and that it is better this way:

[We] cannot go to a Mehtar or Chamar's house. If there is a cushion, and they [a Mehtar or Chamar] sit on it, then we can't take that back from them, we just have to give it to them. These low-caste people, they won't sit on the cushion because they know they are of a low-caste, and so they will sit on the ground. Just like when we go to a Thakur's house and drink chai, they will give it to us in a separate glass that they keep for low caste people, and they won't take that glass into their home. If someone else from our caste goes, they'll use that same glass....It is custom. In homes in villages, these customs have been going on and continue to go on. According to the rural lifestyle, it's better to live this way."

These same social hierarchies shape people's sanitation preferences and behaviors. In particular, many respondents use the language of physical dirtiness to describe ritual impurity, expressing unwillingness to build and use the simple latrines provided by the government because they perceive that doing so would spread dirtiness near their home. A study conducted by the authors exploring the relationship between purity, pollution, untouchability, and poor sanitation in rural north India quotes a high caste man in Uttar Pradesh who defecates in the open saying, "I am the kind of person who lives in a clean and pure place, I feel polluted in having a latrine. It gives off bad smells, the smell of dirtiness will come" (Coffey et al 2015). In part, this manifests as an intolerance for the kinds of latrines that poorer families could afford, demonstrating the confines within which marginalized groups in rural India operate. From the same study, a Dalit woman in Uttar Pradesh who received a government latrine states her preference for a much larger latrine pit: "...the *pradhan* [village leader] has made [the latrine]. But he only got a very little pit dug. If we made it the way we wanted, then wouldn't we have used a whole room full of bricks? How can a poor man...?" (Coffey et al. 2015).

Another important reason for the aversion to simple latrines is that they require frequent emptying, and emptying latrine pits is considered the job of particular low caste communities. Many people believe that there will be negative social consequences if they are seen either doing the pit emptying work that untouchables are responsible for, or even by association, for allowing a low caste person into their home to empty their pit for them. Thus rather than having a latrine with a pit that then must be emptied, many households decide that it is far better to have no latrine at all (Coffey et al. 2015, Dyalchand, Khale & Vasudevan 2011).

The extent to which this caste discrimination is related to the idea of latrine use is clear from both Hindu and Muslim respondents. The head of a Muslim household without a latrine first states that it would be

quite troublesome if a latrine pit fills up because then she would have to get it emptied. When asked about possibly emptying the pit herself, she and a neighbor sitting with her dismiss the idea and say:

“Only a Mehtar [low caste group] can do that pit emptying work. Otherwise we will become Mehtars [low caste] ourselves.”

A Dalit Hindu family without a latrine expresses a similar sentiment, stating:

“We can’t empty [a latrine pit] ourselves. It’s their given occupation, they do this work, not us. They are of the Mehtar caste so they do this cleaning work, but we are of the Pasi caste so we can’t do this cleaning work. If we do it then there will be a severe penalty, we will be ostracized, meaning that no one will eat or drink at our house if we clean this dirtiness ourselves. People won’t eat or drink water from our dishes.”

These quotes demonstrate the extent of social fragmentation that is common in rural India, and give us more evidence for the possibility that the hierarchies and conflict that limit cooperation also impede sanitation adoption. Historical oppression and discrimination continue to shape the way that various groups interact with one another, demonstrating how fragmented rural communities really are. This othering of people of different castes may be an explanation for the lack of concern about the effects of one’s actions on those nearby. The fear of the social stigmatization associated with pit emptying, resulting in an aversion to latrine ownership and use altogether, may indeed trump efforts to promote cooperation to improve the sanitary conditions of the village as a whole. In such a context, where neighbors of different castes cannot freely and respectfully interact, and where sanitation options are limited by the social norms set by those who have power and wealth, it is no wonder that hierarchy, conflict, and open defecation are so closely tied.

Discussion

Existing programs to eliminate open defecation in India have been largely unsuccessful, thus it is imperative to ask what needs to change if we are to make progress. This paper seeks to show that social fragmentation, largely along lines of caste, is still prevalent in rural India and that people perceive it in their everyday lives. This fragmentation, along with casteist notions of who pit latrines promoted by the government are appropriate for, are important reasons that we see such widespread open defecation in India.

Using nationally representative data, we find that households in rural India are more likely to defecate in the open when they perceive general or caste-based social conflict in their village. Hinduism historically and as it is practiced today engrains a ritual avoidance of excreta, and since excreta cannot actually be avoided, “caste Hindu society, not surprisingly, found the solution in ‘polluted’ castes who would manually handle excreta” (Ramaswamy 2005). Our analysis thus suggests that open defecation may

persist in India because of deeply engrained, historical stigma associated with cleaning feces and thus the use of simple pit latrines.

While we can't be certain of the exact mechanism, what is clear is that people in rural India, where open defecation is all too common, conceive of their rural "communities" in a very different way than community-led behavior change methods imagine. In terms of policy, the term "community" must not be oversimplified, as people in rural India often identify themselves more closely along dimensions of religion, caste, age, and/or sex, than they do according to physical geography. Thus it may not be safe to assume that everyone in a physical local area will cooperate to reduce open defecation.

More needs to be understood about situations in which community-led methods are likely to work and those in which they are not. Our qualitative results suggest that part of the reason that conflict is associated with open defecation is because of the conflict that arises from caste-based discrimination and hierarchical social norms.

More immediately, sanitation practitioners must be open to trying out new ideas to tackle India's unique open defecation challenge. It is clear that building more latrines is not the solution, and that the focus now must be on learning how to change behavior effectively. Although CLTS has not been tried extensively in India, and may indeed be a solution in some places in India, it cannot be the only method upon which future programming relies. We cannot assume that geographic neighbors in rural India perceive themselves as a "community." Because of the challenges of caste discrimination and social conflict in rural India described in this paper, it is critical to experiment with new ways of encouraging latrine use that move beyond overly simplistic notions of community harmony and cooperation.

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