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Can Nudges help with India's Sanitation Crisis?

Can open defecation (OD) and its ill-effects on public health be contained through the construction of toilets? The evidence seems to suggest not. While India has made considerable progress in developing part of the physical infrastructure to deal with this challenge, deep-rooted habits and limitations in the design of toilets and associated sanitation infrastructure are constraining progress. This paper contends that, although the supply of toilets is an essential cog in the wheel, attention needs to be paid to issues that constrain the demand for toilets. Can nudges help with the transition to a society rid of OD?

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Introduction

Despite impressive strides in literacy rates, availability of water, advances in telecommunications and a quadrupling of per capita incomes over the past 25 years, the high incidence of open defecation (OD) continues to pose serious challenges for public health in India. Unlike the effects of disparities encountered in access to healthcare and education, this is a crisis that discriminates little between the rich and the poor.

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The problem is not confined to India alone. More than a third of the global population lacks access to adequate sanitation. One-third of schools do not have usable toilets or access to clean water. Three out of 10 people on the planet do not have access to safe drinking water. Sixty-one per cent of the global population (4.5 billion people) lack “safely managed sanitation services – defined as availability of a latrine leading to treatment or safe disposal of excreta.”²

Table 1: The True Cost of Poor Sanitation

Country	Cost (US\$ millions)	Country	Cost (Per cent of GDP)
India	106,700	India	5.2
China	35,900	Lao PDR	3.2
Brazil	10,600	Pakistan	3.0
Pakistan	7,900	Niger	2.7
Indonesia	7,400	Sudan	2.6
Mexico	5,800	Bangladesh	2.4
Bangladesh	5,300	Eritrea	2.3
Nigeria	3,800	Haiti	1.7
Turkey	2,500	Senegal	1.7
Thailand	2,300	Central African Republic	1.7

Source: “The True Cost of Poor Sanitation”, September 2016. LIXIL, Oxford Economics and WaterAid

However, OD rates in India are far higher than in countries at comparable levels of development. Despite progress over the past few decades – the OD rate has fallen from 66 per cent of the population in 2000 to 44 per cent in 2015³ – the 2011 census indicated that 500 million people in rural India still defecate in the open. A rapidly growing population with increasing population density is exacerbating the problem. For India, the World Bank estimated losses of US\$58 billion (S\$78.7 billion) or 6.2 per cent of the gross domestic product (GDP) in 2006. Recent estimates by Oxford Economics and WaterAid put the losses to the tune of US\$109 billion (S\$148 billion) in 2015 or 5.2 per cent of GDP.⁴ India accounted for nearly 50 per cent of the total global cost of poor sanitation – US\$222.9 billion (S\$302.6 billion) – in 2015.

² “WHO/UNICEF Joint Monitoring Programme 2017” report. Posted on 12 July 2017.

³ WHO / UNICEF JMP Report (2017).

⁴ “The true cost of poor sanitation” Sept 2016, Oxford Economics and WaterAid, sponsored by LIXIL.

The losses are due to diseases from contamination of the water supply and ingesting food with pathogens, productivity losses due to endemic illness, healthcare losses from caring for the sick and the sickly, loss of tourist revenues. The costs arising from endemic diarrhoea amongst children account for a significant percentage of health costs. Amongst the understated risks are the inability of children, especially young girls, to attend school without adequate latrine facilities. Nearly 40 per cent of children suffer from stunting, impairing prospects for a productive life. A sanitary and hygienic environment can potentially prevent 10 per cent of all deaths in India.⁵

The Government Response

The Swachh Bharat Abhiyaan [SBA] (Clean India Campaign) is an ambitious sanitation programme launched in 2014 with the objective of ridding India of OD by Mahatma Gandhi's birthday on 2 October 2019. The programme envisages construction of 12 million individual, cluster and community toilets at a cost of nearly US\$30 billion (\$40.7 billion).

Sanitation is a public good that affects the entire population. Poor sanitation generates negative externalities that impact all demographic groups, either in the form of direct health costs or expenditures incurred to sanitise water and food supplies. The nature of these costs warrant direct intervention by the government. Governments intervene in two ways to remedy the market failure arising from unhealthy sanitation.⁶ The traditional route is through direct subsidies for toilet construction and water purification, and related investments to induce healthy sanitation practices. The second type of intervention is through education campaigns aimed at raising awareness of the costs of poor sanitation and induce better sanitation practices. In India, these are known as IEC (Information, Education and Communication) practices. In the Indian context, the two interventions are complementary. Given deep-rooted cultural practices originating in caste hierarchies,⁷ without behavioural change, the construction of

⁵ "Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health", UN Millennium Project.

⁶ Gertler et al (2015) "How Does Health Promotion Work? Evidence from the Dirty Business of Eliminating Open Defecation" NBER Working Paper 20997, March 2015, P Gertler, M Shah, ML Alzua, L Cameron, S Martinez and S Patil.

⁷ Notions of purity, pollution (associated with faeces) and untouchability result in not using latrines that are available, as the presence of faeces in the household is deemed to pollute and render the home unfit for conducting rituals.

toilets will not suffice. While the government has been proactive in constructing toilets across the country, obstacles to the usage of these facilities persist.

Why is OD such an Intractable Problem?

The sanitation crisis is a complex problem, directly or indirectly impacting nearly the entire population. OD releases faecal matter into the eco-system. As OD sites are generally close to water sources, bacteria are rapidly disseminated through the water supply. The same water is often used for bathing, washing clothes and household utensils, and, at times, even for drinking. Consuming this water leads to serious illnesses. Public health is not the only concern. Nutritional deprivation amongst children, pervasive diarrhoeal disease and absence from school sets back children. Accessing clean water entails significant time and costs. All of these factors contribute to the continuous cycle of poor health, malnutrition and poverty.

India's aspiration to build an OD Free (ODF) country rests primarily on a strategy of constructing subsidised toilets across the country. However, Community Led Sanitation (CLTS) programmes across the world have yielded promising results, but not in India. Gertler et al (2015)⁸ offer an evocative account of the workings of the CLTS:

“External facilitators are sent to villages for a few days to lead graphic discussions of the community's current sanitation practices, and to facilitate collective action plans to eliminate open defecation. The facilitated discussions are held in public spaces and are open to all community members. They involve a ‘walk of shame’ where villagers are asked to provide a tour indicating where people defecate, and the routes they take there and back. The facilitator then helps people analyse how faecal contamination is spreading from the exposed excreta to their living environments and food and drinking water. It soon becomes apparent that everyone is ingesting small amounts of each other's faeces. The premise underlying the programme approach is that this approach prompts feeling of disgust that leads to personal and collective desire to solve the problems with the ultimate aim of

⁸ “How Does Health Promotion Work? Evidence from the Dirty Business of Eliminating Open Defecation” NBER Working Paper 20997, March 2015, P Gertler, M Shah, ML Alzua, L Cameron, S Martinez and S Patil.

becoming an ODF community. The community is then on its own to forge its own plan of action with, at best, limited support from the program. The external facilitators sometimes continue make follow-up visits to keep the community motivated and monitor their progress to become the ODF community.”

The programme seeks to develop sanitation facilities and practices that will prevent faecal matter from entering the environment through water sources of flies transmitting pathogens to food and water. Implicit in this approach is recognition of OD as a collective public health issue. To break the vicious cycle of OD and widespread health problems, an ODF community can be realised only with universal participation.

Gertler et al (2015) study of four countries – India, Indonesia, Mali and Tanzania – found that, where public authorities had initiated CLTS programmes, the least effective results were in India. India had “the lightest CLTS intensity with only one visit for triggering and almost no follow-up.”⁹ The improvements in OD rates were entirely due to the subsidies for the construction of private toilets; the use of community toilets was negligible. This is symptomatic of the limitation of the approach that fails to consider the challenges of changing behaviour and assuming just supplying latrines will alone work. Conversely, it suggests that behaviour change in India may hold considerable promise for lowering OD.

A growing body of evidence suggests that the construction of latrines, while an essential part of the infrastructure, is not sufficient to deal with the sanitation crisis stemming from OD in India. Cultural practices, deep-rooted habits and physical limitations of the infrastructure dissuade people from using latrines. A SQUAT survey in 2014 pointed out that, in 40 per cent of households with a functional latrine, at least one member defecated in the open. Forty-seven per cent of those engaging in OD say they do so because they find it “pleasant, comfortable or convenient”.¹⁰ Further evidence supports a preference for OD – a large cohort indicated that “open defecation is more pleasurable and desirable than latrine use”.¹¹ Among people who defecate in the open, a majority believe that OD would be “at least as good for child health as

⁹ Gertler et al. (2015).

¹⁰ “Revealed preference for open defecation: Evidence from a new survey in rural north India” D Coffey, A Gupta, P Hathi, N Khurana, D Spears, N Srivastav, S Vyas. SQUAT Working Paper No 1. June 2014.

¹¹ Ibid.

latrine use by everyone in the village.”¹² People owning a latrine constructed with government assistance choose to continue to defecate in the open.

Even with a choice of building inexpensive latrines such as those in common use in Southeast Asia or sub-Saharan Africa, rural households opt for more expensive ones with higher maintenance costs. Community toilets are shunned and deep caste, gender, religious and economic divide render the cooperation needed to maintain community toilets extremely challenging.

In a setting where OD is the norm, other concerns revolve around the availability of water, effective disposal of waste without permitting it to re-enter the environment and safety and security of the facilities and poor design, inhibit usage of toilets. Areas with newly constructed toilets do not see an immediate elimination of OD. Problems with maintenance, hygiene, lack of awareness of the risks from OD and deep rooted habits of ‘going’ in the open inhibit usage.¹³ A recent report on the efforts towards achieving an ODF area in New Delhi illustrates the challenge of confronting deeply-ingrained habits of ‘doing it in the open’, of fear of closed spaces, and poor maintenance leading to people reverting to old habits.

The prevalence of OD in India, compared to other countries, suggests that factors other than economics are at play. The widely-accepted explanation is the role played by caste but a state-level analysis of data shows significant differences across states. These differences are only partly explained by caste (OD is prevalent in states where untouchability is widely practiced). The uneven progress across states suggests that, aside from implementation, changes in behavioural responses could play a significant role in tackling this problem.¹⁴

Changes in behaviour can bring about dramatic benefits.¹⁵ The simple act of washing hands at critical times can reduce the number of diarrhoea cases by as much as 35 per cent.¹⁶ Improved sanitation reduces diarrhoea morbidity by 37.5 per cent.¹⁷ The challenge then is not just the

¹² Ibid.

¹³ “Toilets in Place, Awareness Missing”, *The Hindu*, 17 July 2017. <http://www.thehindu.com/news/cities/Delhi/toilets-in-place-awareness-missing/article19292756.ece>

¹⁴ “Why doesn’t anyone know if Swachh Bharat Mission’ is succeeding?”. Ideas for India, http://www.ideasforindia.in/article.aspx?article_id=2836. Accessed on 10 July 2017.

¹⁵ Mind, Society, and Behaviour” World Development Report 2015. World Bank.

¹⁶ United Nations Millennium Project

¹⁷ Ibid.

availability of latrines but persuading people to make a habit of maintaining them. Can changes in behaviour induced by ‘nudges’ help?

The Case for ‘Nudging People to do the Right Thing’

The Nudge theory is predicated on the idea that we constantly make decisions that are not in our best interests – not paying taxes, bills or fines on time, binging on junk food, inadequate sleep, delaying a visit to a doctor until the problem makes it imperative to do so or observing poor hygiene. The list goes on. The reasons are well documented. We have a short-term perspective seeking instant pleasure, or an inclination to defer unpleasant decisions (payments to other, exercising prudence in what to eat, when to eat and how much to eat, or exercising). There may be more complex reasons. In a setting where everyone is ‘breaking’ the rules, it may not be in the interests of an individual to ‘do the right thing’, stopping at a traffic signal when nobody else obeys the rules can lead to worse outcomes for someone conforming to the rules.

Nudges can play a useful role in creating demand for toilets.¹⁸ They entail voluntary compliance with a move towards a choice that will enhance individual and, hopefully, social welfare. Nudges are deemed to be a manifestation of libertarian paternalism. Choices are preserved and individuals are nudged towards options that would help enhance individual and, in the case of OD, community well-being. An intelligently designed nudge would be cognisant of local and cultural idiosyncrasies. It is a low-cost intervention that can be targeted directly at subjects whose behaviour policymakers seek to nudge in the ‘right’ direction. The design of effective nudges requires an understanding of local mores, cultural norms and physical conditions, that is, in the context of OD, they call for an understanding of what would induce a demand for latrines.

The challenges of changing OD habits that are deeply ingrained over centuries, and have wide social acceptance, are formidable. Daniel Kahneman identified two modes of decision making.¹⁹ “System 1 is the brain’s fast, automatic, intuitive approach. System 2 refers to the

¹⁸ “Nudge: Improving Decisions about Health, Wealth and Happiness”, 2008, Richard Thaler and Cass Sunstein, Yale University Press.

¹⁹ “Thinking fast and slow”, (2011), Daniel Kahneman.

mind's slower, analytical mode, where reason dominates. But the first often dictates the second. The idea is that System 1 is really the one that is the more influential; it is guiding System 2, it is steering System 2 to a very large extent.”²⁰ Changing deeply-ingrained habits is particularly challenging. So changes in reflexive behaviour, on which nudges are based, need to be bolstered by information (or knowledge) that will strengthen foundations to induce desired changes in System 2 or, broadly, reflective thinking. ICE campaigns highlighting the severe and often irreversible costs of OD on children, women and the broader community – costs inflicted through contaminated water supply, food that has acquired pathogens upon contact with filthy water and unhygienic utensils and dishes are pivotal here. These can induce stronger change through System 1.

A World Bank survey that collates international evidence on the use of nudges to contain OD suggests principles to support OD.²¹ These complement ICE endeavours aimed at informing the public of the hazards of OD, and inducing change. These include:

- i. *“Ensure critical products and infrastructure are immediately and consistently physically available for the end user.”*²² The SBA seems to focus exclusively on toilet construction, with little attention paid to changing behaviour and inducing the formation of healthier habits, as well as encouraging the use of toilets. Nudges to induce the use of facilities, for example, those near public bathing areas that would also allow easier access to water, could allow for System 1-based interventions (nudges) to induce behavioural change.
- ii. *“Create or capitalise on context change to drive new behaviour.”*²³ The ‘no toilet, no bride’ slogan invokes this principle. A marriage, a birth or a child’s first day in school constitutes a significant change in a family’s circumstances. This ‘disruption’ creates a framework to induce behavioural change.

²⁰ Public Lecture by Professor Daniel Kahneman, Harvard Gazette, 5 February 2014. <http://news.harvard.edu/gazette/story/2014/02/layers-of-choice/#pq=AvNIu8>.

²¹ “Nudging and Habit Change for Open Defecation: New Tactics from Behavioural Science” World Bank Water and Sanitation Program Working Paper, March 2016, D Neal, J Vujcic, R Burns, W Wood and J Devine.

²² World Bank (2016).

²³ Ibid.

- iii. *“Piggyback on other existing behaviours and cues.”*²⁴ The daily walk to collect water, bathe or wash clothes is often accompanied by OD. This is a setting to introduce safer sanitary practices.

Poor latrine design, including dark dingy smelly structures in unhygienic conditions, with an uncertain water supply and inadequate waste disposal infrastructure dissuade the public from using them. These drawbacks create friction for the users. Without addressing these issues, it is extremely difficult to induce behavioural change.

The community-based approach adopted by CLTS is a process of self-realisation drawing upon knowledge of the ill-effects of OD, and the resultant sentiments of pride and shame, leading to concrete actions. This lays the foundation for System 1 interventions. The most effective changes are likely to be induced by drawing upon System 1 and 2 interventions.

Examples of successful nudges abound. A nudge-based intervention to induce children to wash their hands improved dramatically from four per cent to up to 78 per cent following a cleaner, well-lit, painted wash basin stands with assured supplies of soap.²⁵ The construction of sex-specific functional latrines has a significant positive effect on a girl’s attendance at schools.²⁶ Pratham, a highly regarded civil society organisation working towards enhancing the quality of learning in schools, incorporates the availability of functional latrines in schools for girls as an important marker of the access to education for girls.²⁷

A Bangalore-based charitable foundation, Arghyam, focusses on women, whose need for toilets is the greatest.²⁸ However, since men make the decisions, the culturally-appropriate narrative of a ‘responsible man’ was deployed, and men were nudged towards building functional toilets. Slogans such as ‘toilets before temples’ and ‘no toilet no bride’ seem to be gaining traction.

²⁴ Ibid.

²⁵ Behavior Change without Behavior Change Communication: Nudging Handwashing among Primary School Students in Bangladesh. R Dreibelbis, A Kroeger A, K Hossain, M Venkatesh, PK Ram. International Journal of Environmental Research and Public Health. 2016 Jan 14;13(1).

²⁶ “Sanitation and Education” Anjali Adukia (April 2017: American Economic Journal: Applied Economics)

²⁷ Poor sanitation imposes particularly severe costs on girls and women – OD exposes them to harassment and often outright violence. Menstruation is considered taboo in many parts of the country and completely neglected as a public health issue. Contaminated water further accentuates the problem. <http://www.pratham.org/>. Accessed on 15 July 2017.

²⁸ “Creating demand for toilets in rural India”. Arghyam. 2014.

Policy Implications

The Indian constitution deems public health, water and sanitation to be the responsibilities of the states. The wide disparities in performance across and within states suggests that there is considerable scope for improved knowledge sharing and knowledge management, and capacity development, and for states to be proactive in seeking viable local solutions. With a part of the physical infrastructure installed, India needs to move to sustainable sanitation delivery framework. The national government can and needs to play a vital role in initiating, coordination, monitoring and evaluation of the SBM until the country is on a sustainable path. The states can draw upon local wisdom and knowledge, with local initiatives, to complement public policy and catalyse change, and assisting with research and dissemination of knowledge.

The SBA is making impressive achievements in developing the physical infrastructure for sanitation through toilet construction and initiating extensive documentation of records that makes it easier to track progress in future. The goal of the SBA is sanitation, not just construction of toilets.²⁹ The dictionary defines sanitation as “conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.”³⁰ Evidence thus far suggests that the usage of toilets is far from optimal. OD rates are high. Evidence, though piecemeal, is that the design of toilets is often flawed or poorly maintained. Sanitation calls for safe disposal of faeces; personal hygiene, including hand washing³¹ and menstrual hygiene;³² collection and disposal of organic waste; and insulating food and water from all of these problems. The construction of toilets is a first and important step.

Nudges can be used to complement more direct interventions. The design of effective nudges calls for attention to changing behaviour and a keen awareness of local customs when designing toilets. Unless the users develop a stake and a sense of ownership in toilets, they will fall into disuse in the longer run. Creating champions advocating ODF areas has proven to be a useful strategy. Scaling up in a vastly heterogeneous country offers serious challenges.

²⁹ Swachhta Status Report 2016, NSSO Office, Ministry of Statistics and Programme Implementation, Government of India.

³⁰ Definition of sanitation is from the Oxford English Dictionary.

³¹ The WHO considers handwashing as a critical component of hygiene.

³² In the absence of clean water and toilets, social taboos and a latent gender bias, menstrual hygiene is a serious problem in rural India in particular, largely ignored by public health authorities. Less than 12 per cent of women can afford tampons.

OD is not just an economic issue as is the case in many other countries, deep-rooted cultural practices inhibit use of latrines. Without interventions in behaviour, these practices will not change even where latrines are available. This paper attempts to highlight nudges as a policy instrument to mitigate OD.

Effective nudges are based on research and field experiments that may need to be modified through repeated trials. They have already yielded promising results in many areas. The SBA can create a useful platform to reduce and eventually eliminate OD. A truly ODF society is feasible but it will call for significant interventions to design latrines amenable to sustained daily use and to induce significant behavioural change. Nudges hold promise as a useful measure in the suite of interventions to transform India into an OD free society.

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