INTELLECT

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CASE STUDY

Health and hygiene in underdeveloped (rural/slums) parts of India

Sanitation, Health and Hygiene in India

Salute to any authority who takes on the unthinkable project on public hygiene, one of the country's greatest predicament. Narendra Modi, India's prime minister is of an opinion that building toilets transcends over temples. His finance minister, Arun Jaitley, used the allotted allocation of the funds for the month to set an objective of ending defecating in the open by 2019. That will be 150 years since the birth of Mahatma Gandhi, who strongly postulated that good sanitation was more important than independence.

Ultimately terminating open defecation would render extensive benefits. Some 130m homes lack toilets. More than 72% of rural people relieve themselves behind bushes, in fields or by roadsides. India accounts for nearly 600m of the 1 billion people in the world who have no toilets.

The costs are high. Public safety is another unaddressed problem, as young women have to leave their rural homes after dark. In May two teenage girls in Uttar Pradesh visiting a field used as a communal toilet were raped, murdered and strung up from a tree. That case won notoriety for its extreme barbarity, but similar attacks are distressingly common.

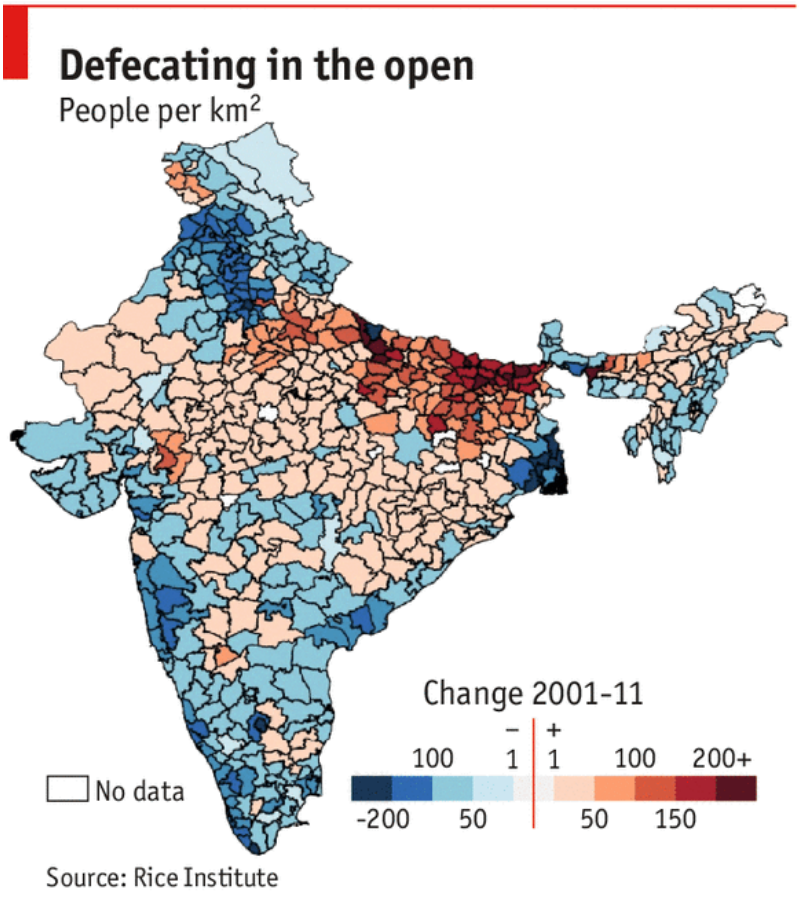
A broader matter is public health. Open defecation is disastrous when practised by groups in close contact with each other. Because India's population is huge, growing rapidly and densely settled, it is impossible even in rural areas to keep human faeces from crops, wells, food and children's hands. Ingested bacteria and worms spread diseases, especially of the intestine. They cause enteropathy, a chronic illness that prevents the body from absorbing calories and nutrients. That helps to explain why, in spite of rising incomes and better diets, rates of child malnourishment in India do not improve faster. Unicef, the UN's agency for children, estimates that nearly one-half of Indian children remain malnourished.

Hundreds of thousands of them die from preventable conditions each year, especially in the north, which has most of the open defecation (see map). Faeces in groundwater spread diseases such as encephalitis, an annual post-monsoon scourge in eastern Uttar Pradesh. Diarrhoea leaves Indians' bodies smaller on average than those of people in poorer countries where people eat fewer calories, notably in Africa. Underweight mothers produce stunted babies prone to sickness who may fail to develop to their full cognitive potential. Dean Spears, a Delhi-based economist, says the costs of all this, in incomes and taxes forfeited, are far greater than the price of fixing it.

How to do so? India fares worse on sanitation than a host of poorer places including Afghanistan, Burundi and Congo, partly because too many of its leaders are too squeamish to face up to the issue. Thankfully, that appears now to be changing. The government, gung-ho for infrastructure, has just said it will build 5.2m toilets by September, or one every second.

Pouring concrete will not in itself solve India's problems. Leaders need also to confront the cultural reasons for bad sanitation. Hindu tradition, seen for example in the "Laws of Manu", a Hindu text some 2,000 years old, encourages defecation in the open, far from home, to avoid

ritual impurity. Caste division is another factor, as by tradition it was only the lowliest in society, "untouchables" (now *Dalits*), who cleared human waste. Many people, notably in the Hindu-dominated Gangetic plains, today still show a preference for going in the open—even if they have latrines at home.



Evidence is growing that India must urgently correct its cultural practices, though it is sensitive to say so. Studies of India's population show how since at least the 1960s child mortality rates have consistently been higher in Hindu families than Muslim ones—though Muslims typically are poorer, less educated and have less access to clean water. Today, out of every 100 children, 1.7 more Muslim than Hindu ones survive to five years, a big gap.

Mr Spears and his colleagues argue that this can be explained only by differences in sanitation habits. A 2005 government survey, the most recent national one, found that 67% of all Hindu households, rural and urban, practised open defecation, compared with just 42% of Muslim ones. (In rare places where there is more open defecation among Muslims than Hindus, the mortality gap is reversed.)

In an unpublished parallel survey of Hindu-dominated villages in north India and Nepal, respondents lauded open defecation as wholesome, healthy and social. By contrast, latrines were

seen as potentially impure, especially if near the home. Men often described them as for use only by women, the infirm and the elderly. In short, demand for latrines is constrained.

This suggests that the mere availability of government-built latrines will not end open defecation for decades yet. What is needed instead are public campaigns, in schools and in the media, to explain the health and economic benefits of using toilets and of better hygiene. Researchers found that only a quarter of rural householders understood that washing hands helps prevent diarrhoea.

Such campaigns not only mean government-built latrines have a better chance of being used; they would also encourage households to build them for themselves. Precisely how to raise awareness about a touchy subject is not clear, but some at least are trying. A catchy animated music video put out by Unicef urges Indians to "take the poo to the loo". The intention is right, even if the dancing turds will not immediately be to everyone's taste.

A new household survey of nearly 23,000 north Indians offers more evidence, especially from Hindu households. Led by Diane Coffey, an economist at Princeton, it found that even among households with a working latrine, more than 40% reported that at least one family member preferred to defecate in the open. Those with a government-built toilet were especially likely to choose a bush instead.

According to an article in LiveMint, data has been released by the National Sample Survey Office (NSSO) from a survey conducted in 2012; which has once again underlined the abysmal state of sanitation in the country, particularly in rural India. According to this survey, only 32% of rural households have their own toilets and that less than half of Indian households have a toilet at home. There were more households with a mobile phone than with a toilet. In fact, the last Census data reveals that the percentage of households having access to television and telephones in rural India exceeds the percentage of households with access to toilet facilities. Of the estimated billion people in the world who defecate in the open, more than half reside in India.

Poor sanitation affects health of children

Poor sanitation impairs the health leading to high rates of malnutrition and productivity losses. India's sanitation deficit leads to losses worth roughly 6% of its gross domestic product (GDP) according to World Bank estimates by raising the disease burden in the country. Children are affected more than adults as the rampant spread of diseases inhibits children's ability to absorb nutrients thereby stunting their growth. As health economist Dean Spears argued "a large part of India's malnutrition burden is owing to the unhygienic environment in which children grow up. Poor sanitation and high population density act as a double whammy on Indian children half of whom grow up stunted". It is not a coincidence that states with the poorest levels of sanitation

and highest levels of population density such as Bihar, Jharkhand and Madhya Pradesh also have the highest levels of child malnutrition in the country.
This unhygienic environment is due to India's historic neglect of public health services. The absence of an effective public health network in a densely populated country has resulted in an extraordinarily high disease burden.

About 48 per cent of children in India are suffering from some degree of malnutrition. According to the UNICEF, water-borne diseases such as diarrhoea and respiratory infections are the number one cause for child deaths in India. Children weakened by frequent diarrhoea episodes are more vulnerable to malnutrition and opportunistic infections such as pneumonia. With 638 million people defecating in the open and 44 per cent mothers disposing their children's faeces in the open, there is a very high risk of microbial contamination (bacteria, viruses, amoeba) of water which causes diarrhoea in children. Also, diarrhoea and worm infection are two major health conditions that affect school children impacting their learning abilities.

The importance of public health programmes on hygiene and prevention tools

There are many organisations and public- private collaborations working to improve access to toilets, improving drainage facilities and creating awareness through education campaigns on the importance of preventive tools such as hand washing. Hand washing with soap is among the most effective and inexpensive ways to prevent diarrhoeal diseases and pneumonia. Poor wash causes diarrhoea, which is the second biggest cause of death in children under five years. According to the Public Health Association, only 53 per cent of the population wash hands with soap after defecation, 38 per cent wash hands with soap before eating and only 30 per cent wash hands with soap before preparing food. Only 11 per cent of the Indian rural families dispose child stools safely. 80 per cent children's stools are left in the open or thrown into the garbage.

According to the UNICEF, hand washing with soap, particularly after contact with excreta, can reduce diarrhoeal diseases by over 40 per cent and respiratory infections by 30 per cent. Hand washing by birth attendants before delivery has been shown to reduce mortality rates by 19 per cent while a 4 per cent reduction in risk of death was found if mothers washed their hands prior to handling their newborns.

Schools provide an excellent opportunity for children and parents to learn about healthy hygiene practices. There is an urgent need for adequate, well-maintained water supply and hygiene facilities which include proper toilets and hand washing basins in schools all across India.

Inadequate water supply and sanitation in schools are health hazards and affect school attendance, retention and educational performance. A good example of one such recent project was implemented by Save the Children in partnership with Harpic in New Delhi, India. More needs to be done about giving girls the knowledge and facilities necessary for good menstrual hygiene is key to their dignity, privacy, educational achievement and their health. Adolescent girls are empowered through improved menstrual hygiene management.There need to be awareness campaigns for mothers and caregivers. Hand washing with soap at critical times is important for protecting the health of the whole family. By being a role model, mothers and caregivers can also help instil in their children healthy hygiene practices, which will serve them for life.

Until now, a number of innovative public health campaigns and programmes to improve health and hygiene have been implemented in India but more needs to be done. These include community-led public-private partnerships to improve access to toilets and awareness campaigns in schools and slums in both urban and rural sectors. There is an urgent need for more such campaigns all across India.

Current solutions to address chronic diseases in slums are not working

Prevention is not a priority

Studies show that even in the developed world, individuals will often ignore or underutilize preventative health treatments. Although some reasons for this trend can be traced to lack of knowledge or resources, it is also partly because individuals often don't see the direct benefits from the cost. In other words, with a limited income, families have a choice to spend their money on many things. Too often, family income is spent on "emergency" needs – school bills that are past due, any type of food to fill empty stomachs, or a bus ticket that takes a family member to work. There is rarely enough money saved to allow families to plan for the future. Even with enough money, preventative care can be hard to measure in strict economic terms and a difficult behaviour to instil both in rich and poor consumers.

Slums are a challenging place to access affordable and nutritious food supplies and basic preventative care. Slum dwellers also may be unable to access sufficient knowledge about chronic diseases. Because of these problems, which are exacerbated by the strain and hardship of living in poverty, slum dwellers are simply unable to prevent chronic disease on their own.

Alternate solutions are preferred, which delay correct diagnosis and treatment

People often favour using conventional wisdom from family members, neighbours or friends to treat ailments over visiting a hospital or clinic. Because the situation in slums makes accessing and

paying for healthcare burdensome, self-medication can be even more common and potentially more dangerous.

Although self-medication can be an affordable method of care, it can also be unsafe. A survey done in Mumbai found that almost 25 percent of those who self-medicate use old, leftover drugs, and almost 13 percent borrow medication from a friend or neighbour. This can result in drugs that are at best less potent and at worst dangerous.

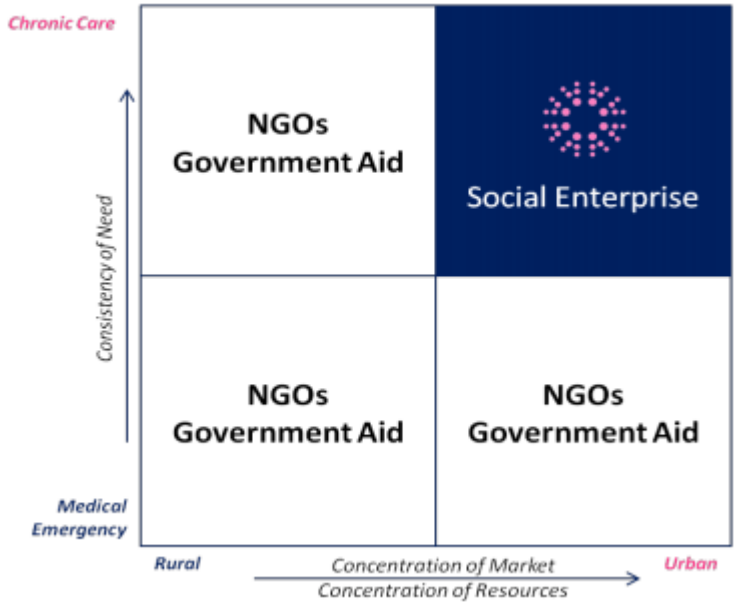
For chronic diseases, in particular, this sort of ad hoc treatment extends the amount of time slum dwellers wait to go to a clinic or hospital and can expose more people to dangerous counterfeit medication. Professional treatment, even when severe symptoms do develop, is often postponed for any number of reasons: misunderstanding of symptoms and warning signs, inability to pay for service, lack of access to services, overwhelming procedural process, or mistrust of medical personnel and facilities. For most chronic disease, delaying treatment can cause additional complications (like diabetic amputation or metastasized cancer).

Clinics are ill-equipped to identify chronic diseases early and provide proper treatment

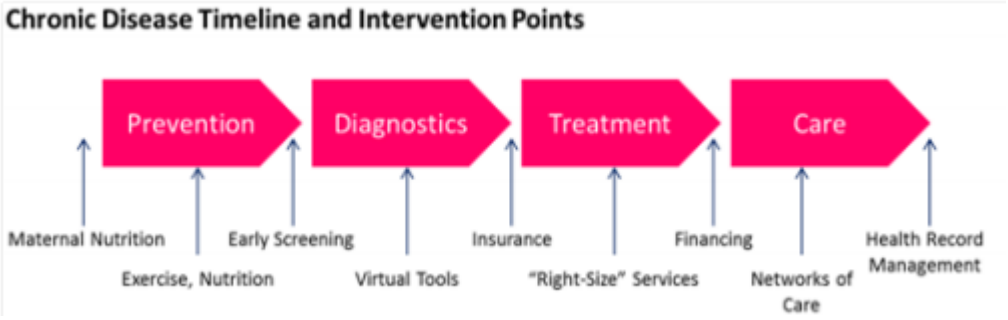
Doctors and caregivers are under immense pressure, particularly in slums where their resources are stretched – often to a breaking point. Because early warning signs of chronic disease are often unrecognized, not just by patients but by physicians as well, life-saving care can be even more difficult to get on time. Additionally, sufficient medical supplies can be difficult to find in slums, and doctors are forced to treat illnesses without the proper tools.

Social enterprises may be the best option to address this issue

Social enterprises deliver both social impact and business profit. They deliver social impact by improving the health and well-being of the world's most vulnerable people. While social enterprises can be either for-profit or not-for-profit organizations, they all aim to utilize a pricing strategy that will create a sustainable, consumer or partner-driven business model. This helps reduce or eliminate dependence on donations and cash injections. Slums will benefit from the emergence of more social enterprises – particularly those focused on prevention, diagnostics, treatment, and sustainable care to chronic disease.



Addressing pain points along the chronic disease timeline will improve solutions for slum dwellers throughout the developing world. Bigger, better, bolder, faster and cheaper solutions are needed in all parts of this chain: from manufacturing to distribution channels to treatment and continued care. Solutions that integrate the participation of slum dwellers are considered even more interesting because they create employment, purpose, and economic wealth for these individuals. Robust and scalable business solutions that create economic wealth across the value chain for all stakeholders are needed to improve care for people suffering from non-communicable diseases in slums.



Efforts are already in place to create solutions around food security and education. For that reason, we encourage solutions that focus on the early identification of chronic diseases, their treatment and care.

However, building successful social enterprises in slums will be difficult

All people are exposed to risk from unexpected changes in the environment, accidents, illnesses, price increases or cash availability. Unfortunately, low income individuals have limited safety nets,

social networks and buffers to deal with unexpected change, particularly the major expenses associated with chronic disease care. Social enterprises that target these types of customers will have to work with value chain players who are also at a higher risk in an environment with limited government support and infrastructure.

Social enterprise operations are difficult to manage

Finances must be efficient

Social enterprises need to operate with razor-thin margins in an environment of fluctuating demand and supply. In informal business (which dominates the economic landscape in urban slums), relationships with suppliers and customers are informal – the hierarchy of roles and work is flexible.87 There are few, if any, contracts. Contracts are irregular and hours of operation vary. Managing cash collection, inventory and supplier payments is key to ensuring a healthy cash position. To reduce cost, social enterprises will need to grow significantly to enjoy economies of scale. Both working capital and scaling up can be managed through financing. Unfortunately, financing for companies working in the slums or targeting poor slum dwellers is limited to a few microfinancing institutions.

Assets must be able to bear risk

Social enterprises working in slums are exposed to higher risk from supply chain inefficiency, fire hazards, natural disasters, corruption and high crime rates. Most insurance organizations are unable to assess the risk, claims and premiums accurately enough in slums to build a viable business. Social enterprises have to manage their environment and assets to ensure business continuity in the face of risk that most enterprises in wealthier regions have insurance for.

Employee training must be flexible and culturally appropriate

Social enterprises should hire from slums to increase social impact; however, these potential employees may not have the appropriate skills and training for the job. Training and on-the job skills development will put additional stress on management and operations. Additionally, it is critical to work with local employees in a way that is culturally acceptable and considerate to differences in gender sensitivity, religious practice, dietary preferences and other social norms.

Inconsistent demand is hard to plan for

Most services are not derived from homogenous demand. Airlines, banks, and particularly health care clinics may see demand vary by time of day, day of the week or even by season. These fluctuations can make operations difficult, particularly for social enterprises struggling to leverage sustainable business models. Operating with peaks and valleys of demand can quickly wipe out many businesses that must operate on squeezed margins.

Fair pricing for health solutions is difficult to implement

Social enterprises will have to struggle with the same challenges that traditional businesses do in building business models for the healthcare industry. Healthcare is extremely susceptible to inelastic demand and what is known as “dynamic inconsistency.” This means that the need, and therefore willingness to pay, for services fluctuates dramatically over time. As a result, setting market prices is difficult to do with fairness and integrity. This inconsistency, combined with a unique lack of transparency and feedback mechanisms around true pricing, means that healthcare social enterprises will not be able to use business models leveraging traditional supply and demand curves.

Consumers with fluctuating income and limited savings are difficult to serve

Poor people in slums lack adequate education. Those with less education typically make less money and lack access to higher paying jobs. The jobs that slum dwellers are able to access are often irregular and provide fluctuating income. Social enterprises will need to have business models that can accommodate inconsistent consumer income. In addition, slum dwellers who do not have sufficient education do not typically have enough knowledge about proper chronic disease prevention, diagnostic, treatment and care options.

Slum dwellers also struggle to build significant savings accounts that are critical to being able to pay for medical care and services. Without a savings account, people sometimes fundraise for their own medical procedures by begging in their own communities. Those lacking in healthcare in slums typically have incomes between 1 USD to 5 USD a day. Social enterprises that target this segment will have to provide low-cost solutions that consider financing and savings opportunities within this income level.

Partners across the value chain are difficult to work with dependably

Pharmaceutical producers, medical equipment manufacturers, and distribution networks to hospitals and clients must ensure quality care. However, most players in the healthcare value chain are remote and ill-designed for slum environments, which make the whole value chain fragile. Social enterprises will face significant challenges in building a consistent and predictable supply chain.

Addendum: Create Successful Social Enterprises

Figure 16. The Innovation Value Chain can identify opportunity points

To develop a solution, lessons learned by other companies, NGOs and social enterprises in other industries should be considered. IXL Center uses the innovation value chain to find growth and opportunity in new areas. There are bright spots around each section of the innovation value chain – market, delivery, offering, production and business model – that should be considered as inputs when developing solutions for the poor (Figure 16).

Find customers who can pay

- Target profitable customers and segments
- Know your customers' needs and behaviors
- Plan for consumers who lack trust

What you should ask:

- *Who is your target customer?* Social enterprises typically target those who earn more than 2 USD/day.
- *What are your customers' needs and purchase behavior?* Offerings need to delight customers and be integrated into existing behaviors.
- *How will you build trust and credibility for your consumers?* Making the wrong decision has much more serious consequences for the poor, so customers must trust in what they pay for.

Use existing channels

- Tap existing channels
- Use powerful influencers
- Leverage virtual solutions

What you should ask:

- *What existing distribution channels of major corporations or local business can you work with?* Channels that have already been built may cost money, but they are effective and ready immediately.
- *Who or what are the influencers that can accelerate acceptance of your offering?* Strong relationships and word-of-mouth networks can scale social enterprises quickly.
- *How can you use new and existing technology to move goods and services virtually?* Finding solutions that leap-frog the developed world with technology can be more cost-effective.

Make offerings affordable and accessible

- Right-size solutions
- Hold people and organizations accountable
- Focus on human-centered design

What you should ask:

- *How can you build your offering in pieces?* Low-income families can pay for things bit by bit more easily than all at once.
- *What can you do to ensure accountability?* Audits and monitoring should be embedded to keep business trustworthy.
- *Who are you designing for?* Your customers are more likely to pay for things that were designed with them in mind.

Build with local parts and knowledge

- Use parts that are available where you are delivering
- Apply insight and knowledge of the community
- Build with assets of value

What you should ask:

- *What do you need to replace parts of your offering with locally available supplies?* You can save money and time by building closer to home.
- *Who has knowledge that can help you be more successful on the ground?* Navigating communities often requires local support and engagement.
- *What assets will make your enterprise more valuable by itself?* Just because something is free, does not mean it is valuable to your operations.

Go beyond traditional business models

- Provide value exchanges and microfranchises
- Create intangible value
- Create a business model with flexibility

What you should ask:

- *How does your solution capture the value you create?* Capturing value is a critical step to making your social enterprise economically self-sustainable.
- *What do you offer people that is difficult to put a price on?* Your offering will be more interesting if you free up people's time, or increase self-esteem, dignity, security or happiness.
- *What are the different stages of your business model?* You may need to finance operations differently during the pilot and early stages than you do at scale.

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