



## SANITATION AND HEALTH

### A movement visualizing Gandhi's Dream

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**M**ahatma Gandhi had said, "I want clean India first and independence later."

Since ancient times, manual scavenging has been in existence in India. Manual scavenging and unhygienic practices of cleaning human excreta with bare hands are inhuman. The people doing this work of cleaning dry toilets and carrying and disposing human faeces are known as scavengers, and are treated as untouchables.

The 'Sulabh Movement' started in as early as 1970s, invented and developed many designs of two-pit pour-flush toilets and popularized them as *Sulabh Shauchalayas* (Toilets).

Today, Sulabh covers approximately a population of 20 million persons per day by building 1.5 million household toilets, more than 9,000 public toilets and 20,000 school toilets.

Along with this, after liberating, along with the government, about a million scavengers from their demeaning and subhuman occupations, Sulabh has opened vocational training centers in Patna, New Delhi, Alwar, Tonk, Arrah, *etc.*, for their rehabilitation. It also started a center, 'Nai Disha' (New Direction), in Alwar, Rajasthan, to give the liberated scavengers education and vocational training in different trades.

Hence, Sulabh did not stop at just liberating the scavengers from their demeaning profession, which was the dream of Mahatma Gandhi, but also took care

of the liberated scavengers by giving them alternate livelihood options.

Sulabh, therefore, comprehensively covers today the problems of environmental sanitation, public health, untouchability, social discrimination and problems of vulnerable communities, including widows.

Finally, a much awaited *Swachh Bharat Abhiyan* (SBA), or *Swachh Bharat* Mission (SBM) (Clean India Mission), was initiated by the Hon'ble Prime Minister – a nation-wide campaign in India for the period 2014 to 2019 that aims to clean up the streets, roads and infrastructure of India's cities, towns, and rural areas.

The objectives of *Swachh Bharat* include eliminating open defecation through the construction of household-owned and community-owned toilets and establishing an accountable mechanism of monitoring toilet use. Run by the Government of India, the mission aims to achieve an 'open-defecation free' (ODF) India by October 2, 2019, on the occasion of the 150<sup>th</sup> birth anniversary of Mahatma Gandhi, by constructing 90 million toilets in rural India at a projected cost of 1.96 lakh crore (US\$30 billion). The mission will also contribute to India reaching Sustainable Development Goal 6 (SDG 6), established by the UN in 2015.

The campaign was officially launched on October 2, 2014 at Rajghat, New Delhi by the Hon'ble Prime Minister. It is India's largest cleanliness drive to date with three million government employees and

students from all parts of India participating in 4,041 cities, towns, and rural areas. Hon'ble Prime Minister has called the campaign *Satyagrah se Swachhagra* in reference to Gandhi's *Champaran Satyagraha*, launched on April 10, 1917.

The mission has two thrusts: *Swachh Bharat Abhiyan* ('*gramin*' or 'rural'), which operates under the Ministry of Drinking Water and Sanitation; and *Swachh Bharat Abhiyan* ('urban'), which operates under the Ministry of Housing and Urban Affairs.

In 2014 (before the start of the *Swachh Bharat Mission*), there were an estimated 140,000 deaths from diarrhoeal disease attributable to unsafe sanitation out of a total of 443,000 diarrhoea deaths; about 39,000 of those attributable deaths occurred in children younger than five years. After the start of the *Swachh Bharat Mission*, mortality from unsafe sanitation is estimated to have declined to about 120,000 diarrhoeal deaths per year in 2015/2016, 50,000 deaths in 2017/2018 (Scenario 3) and – for the hypothetical scenarios 4, 5, 6 and 7 of 85 per cent and 90 per cent in 2018, and 95 per cent and 100 per cent access with safe sanitation in 2019 – 35,000 deaths, 23,000 deaths, 11,000 deaths and 0 deaths from unsafe sanitation in 2019 (WHO, 2018).

Diarrheal diseases are excellent indicators of the stage of development of communities in LMICs (low and middle income countries) because of the impact of proximal and distal determinants of diarrheal morbidity and mortality. Mounting and diverse evidence suggests that subclinical infections with diarrhea pathogens can cause physiological and structural alterations of the gut with adverse consequences on child nutrition and growth.

Because diarrhea is ultimately transmitted from infected stools, clean water and safe disposal of faeces have major impacts on diarrhea incidence. Environmental Enteric Dysfunction (EED) is also a consequence of continuing ingestion of faecal microorganisms. Hence, water and sanitation improvements should also reduce EED, which is a cause of early malnutrition. Reductions in diarrhea risk of 17 per cent and 36 per cent have been shown due to improved water quality and excreta disposal, respectively. Demographic and Health Surveys between 1986 and 2007 also suggest that access to improved water and sanitation reduces risk of diarrhea

and diarrhea related mortality as well as incidence and also risk of mild to moderate stunting.

For children in LMICs, repeated episodes of diarrhea resulting from high exposures to enteric pathogens have a negative effect on nutritional status for several reasons, including reduced appetite and impaired intestinal absorption. Long-term consequences include under-nutrition, impairment of normal growth and cognitive development. For example, a review of global data available for 2010–2011 estimated that 25 per cent of stunting could be attributed to five or more episodes of diarrhea before 2 years of age.

A recent review in the WHO – South East Asia Journal of Public Health has clearly highlighted the linkage of sanitation to health as well as nutrition and suggested the way forward.

A WHO-supported study done in the 1980s in West Bengal, India, found that universal provision of safe drinking water and sanitation facilities, along with hygiene education, improved the nutritional status of children significantly, even though no food supplementation was provided. The worm infestation and diarrheal disease rates also decreased significantly.

'The Asian enigma' was a term first coined by economists in the 1990s for the counter-intuitive observation that children in Asia, on an average, were shorter than their counterparts in sub-Saharan Africa who, on an average, were poorer. Subsequent analyses found that the height of Indian children correlates with their neighbor's access to toilets, and that open defecation accounts for much of the excess stunting in India due to faecally-transmitted infections.

The practice of open defecation, *i.e.*, where human faeces are disposed of in open spaces, such as fields or beaches, is especially harmful in locations with high population densities. A recent analysis using multi-sectoral indicators in 32 districts of the state of Tamil Nadu in India has shown that the district with the highest prevalence of open defecation also has the highest rate of stunting in children.

A similar assessment done using various data sources of India as well as of Bangladesh showed similar results.

Hookworm infection resulting from open defecation leads to skin penetration of the hookworm larvae from the soil. According to 2009 data, about 42 per cent of children worldwide are in need of

deworming treatment while, in the WHO South-East Asia Region, approximately 64 per cent of children in India require deworming, while it is 15 per cent from Indonesia and 13 per cent from Bangladesh.

A systematic review and meta-analysis has shown that availability of sanitation facilities is associated with significant protection against infection with soil-transmitted helminthes, indicating a need to prioritize improved sanitation along with preventive chemotherapy and health education.

It is concluded that, unless open defecation is stopped by use of toilets, achieving 'health for all' will remain a dream. The father of the nation realised this truth even before India became independent and came of its own.

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## REFERENCES

- Bagchi T, Bulusu S, Mukherjee S, Chakravarty I. Ecology of protein energy intake. A biosocial study on the Lodhas – the primitive tribal groups of West Bengal. *Man and Life* 1986; 12 (1 & 2): 47–60.
- Cairncross S, Hunt C, Bostoen S, Curtis V, Fung IC, Schmidt WP. Water, sanitation and hygiene for the prevention of diarrhoea. *Int J Epidemiol* 2010; 39 (Suppl 1): i193–205.
- Chakravarty I, Ahmed T. *A Synthesis Report of Bangladesh and India – Exploring Impacts of Drinking Water and Sanitation on Health and Nutrition and Socioeconomic Status of Communities; Ecosystem for Life: A Bangladesh-India Initiative*. International Union for Conservation of Nature (IUCN); 2015; 1–68.
- Chakravarty I. *Comparative assessment using multisectoral public health indicators in various areas of Tamil Nadu. Chennai*. State Planning Commission; 2017.
- Chakravarty I, Bhattacharya A, Das SK. Water. Sanitation and hygiene: the unfinished agenda in the World Health Organization south-east Asia region; *WHO South East Asia J Public Health* 2017; 6 (2): 22–26.
- Fink G, Günther I, Hill K. The effect of water and sanitation on child health: evidence from the demographic and health surveys 1986–2007. *Int J Epidemiol* 2011; 40 (5): 1196–204.
- Langford R, Lunn P, Panter-Brick C. Hand- washing, subclinical infections, and growth: A Longitudinal Evaluation of an Intervention in Nepali Slums. *Am J Hum Biol* 2011; 23 (5): 621–29.
- Mills JE, Cumming O. The impact of WASH on key health & social outcomes – review of evidence. SHARE/UNICEF; 2016. Available from: [http://www.susana.org/\\_resources/documents/default/3-2780-125-1494258180.pdf](http://www.susana.org/_resources/documents/default/3-2780-125-1494258180.pdf), accessed on July 11, 2017.
- Pathak B. *Sulabh Shauchalaya – A simple idea that worked*. Sulabh International 6th edition; 1987.
- Pathak B. *Road to Freedom*. Motilal Banarsi Dass, 8<sup>th</sup> reprint; 2006.
- Pathak B. *Gandhi-Sanitation and Untouchability*. Sulabh International; 2009.
- Pathak B. *Serfdom to Freedom – Untouchables Voyage to United Nations*. Sulabh International; 2009.
- Pathak B. *Sanitation and Scavenging in India-Achievements and Challenges*. Sulabh International; 2010.
- Pathak B. *Environmental Sanitation and Eradication of Scavenging in India*. Sulabh International; 2010.
- Pathak B. *Mahatma Gandhi's Life in Colour*. GandhiServe India; 1<sup>st</sup> Edition; 2016.
- Pathak B. *Supreme Court of India and Widows of Vrindavan*. Sulabh International; 1<sup>st</sup> Edition; 2016.
- Spears D. Effects of rural sanitation on infant mortality and human capital: evidence from India's total sanitation campaign. Princeton: Princeton University; 2012. Available from: [http://www.susana.org/\\_resources/documents/default/2-1767-impactsanitation-mortality-nutrition-india-spears.pdf](http://www.susana.org/_resources/documents/default/2-1767-impactsanitation-mortality-nutrition-india-spears.pdf), accessed on June 6, 2017.
- Walker CL, Rudan I, Liu L, Nair H, Theodoratou E, Bhutta ZA, O'Brien KL *et al*. Global burden of childhood pneumonia and diarrhoea. *Lancet* 2013; 381(9875): 1405–16.
- World Health Organisation. *Swachh Bharat Mission – Preliminary estimations of potential health impacts from increased sanitation coverage*. 2018.

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Mahatma Gandhi, accompanied by Dr. Sushila Nayyar, visits CIPLA (Chemical Industrial and Pharmaceutical Laboratory), Bombay, July 4, 1939.