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Research Article

Availability of Toilets at the Household Level in India: Evidence from National Family Health Survey

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A B S T R A C T

Introduction: Poor sanitation has an impact on all facets of human life, including health development, economy, dignity of a human being, nutrition and empowerment of individuals. Globally, one in ten people use open defecation and India has 564 million people who defecate in the open. The government of India is trying to eradicate open defecation by constructing individual household toilets through different sanitation programmes.

Methodology: This study analyses the sanitation conditions in India from 1992–93 to 2019–21. This study used five different rounds of the National Family Health Survey (NFHS) conducted in following years: NFHS-1 (1992–1993), NFHS-2 (1998–99), NFHS-3 (2005–06), NFHS-4 (2015–16), and NFHS-5 (2019–21).

Results: This study found that 69.3% of households had improved toilets, 8.4% had shared toilets, 2.9% had unimproved toilets and 19.4% did not have any toilet facility in 2019–21. This revealed that the individual household toilet facilities increased as a result of different sanitation programmes implemented by the government of India.

Conclusion: The last two decades highlight significant progress in improving access to adequate sanitation, driven by various government initiatives and policies. The data also reveals a shift towards more modern sanitation systems, such as flush toilets connected to piped sewer systems or septic tanks, indicating urbanisation and infrastructural development. This transition is crucial for public health, as it reduces the risk of waterborne diseases and improves overall well-being.

Keywords: Toilet, Sanitation, Open Defecation, NFHS, SBM

Introduction

Poor sanitation has an impact on all facets of life, including human health, sustainable development, economy, dignity of a being, nutrition and empowerment.[1] One of the main risk factors for infant mortality around the world is poor sanitation. According to the World Health Organisation basic sanitation means "lowest-cost technology providing hygienic excreta and sludge management and a clean and healthy living environment both at home and in the neighbourhood of users".[2] Defecating in the open by women promotes ill health and has long-term adverse effects on their physical, psychological, and social wellbeing.[3] The reason for inadequate toilets is the cost of building a toilet; thus, they prefer to defecate in the open. People who built toilets with government assistance were more likely to defecate in the open than people who paid for their own construction.[4]

Sanitation and the provision of adequate water for drinking were deemed to be fundamental human rights by the UN General Assembly. The objective in connection with sanitation services is expressed by Sustainable Development Goal 6: "Ensure access to water and sanitation for all", target 6.2. The aim specifies that "by 2030, (nations) achieve the provision of adequate and equal hygiene and sanitation for all and end open defecation, having special focus on the needs of women and girls and those in risk situations".[5] Worldwide, 90% of diarrhoea-related deaths are caused by poor water and sanitation practice, which is substantially higher than the combined mortality from malaria and HIV/AIDS.[6,7] To maintain a healthy existence, it is crucial for every human being to have access to adequate drinking water, sanitary conditions, and good hygiene practices. In terms of cleanliness and hygiene, India lags considerably behind a lot of emerging nations. In India, the majority of cities and towns struggle with challenges like crowded housing and inadequate facilities for removing human waste.[8] The burden on cleanliness, the availability of drinkable water, and solid and liquid waste management would increase as the population grew.[9] In India low-income households can most easily obtain government subsidies, while higher-income households are more likely to use their savings or money to build a toilet.[10] India has 564 million people who defecate in the open.[11] Taking these concerns into account, the Indian government has launched numerous targeted measures at the national level, including the "Swachh Bharat Mission", which was introduced in October 2014.[12] The Government of India is trying to eradicate open defecation by constructing individual household toilets through different sanitation programs such as Central Rural Sanitation Programme in 1986 (CRSP), Total Sanitation Campaign 1999 (TSC), Nirmal Bharat Abhiyan in 2009 and Swachh Bharat Mission in 2014. In this context, this study analyses the sanitation conditions in India.

Methodology

The present study followed ethical norms for collection of review of literature, secondary data collection, analysis and interpretation.This study used descriptive analysis utilising secondary data from the National Family Health Survey (NFHS), conducted by the Ministry of Health and Family Welfare, Government of India. The NFHS comprises five series, offering comprehensive insights into various health-related aspects of households in India. These include demographic characteristics, age at marriage, fertility rates, infant mortality rates, family planning practices, access to drinking water sources, availability of sanitation facilities, and nutritional status, among others. The study utilised data from five survey rounds conducted in 1992-93 (First round), 1998–99 (Second round), 2005-06 (Third round), 2015-16 (Fourth round), and 2019-21 (Fifth round). These rounds collectively provide a longitudinal perspective on changes and trends in the health and socio-economic indicators across India over the years. The first sections explicate the sanitation conditions. The next section analyses the state of toilet facilities based on the five rounds of NFHS. The third section discusses various sanitation programs and their impacts. The final section presents the conclusions drawn from the analysis.

Results

Accessible Types of Toilets in India from 1992 to 1999

According to NFHS-1 (1992–93) and NFHS-2 (1998–99), the type of sanitary facility in India is divided into four categories: (i) flush toilet, (ii) pit toilet/ latrine, (iii) other, and (iv) no toilet.[13,14] From Table 1, it can be observed that from 1992–93 to 1998–99, there was a slight increase in the total percentage of households with flush toilets from 21.6% to 24.0%. In rural areas, the percentage increased from 6.9% to 8.8%, and in urban areas, it increased from 60.1% to 63.9%. The percentage of households with pit toilets/ latrines increased from 8.6% to 11.9% from NFHS 1 to NFHS 2. In rural areas, there was an increase from 5.9% to 10.0%, while in urban areas, it increased from 15.5% to 16.8%. Almost 69.7% of households did not have access to toilet facilities during 1992–1993. However, this number fell to 64.0% in 1998–1999. In rural areas, it decreased from 87.1% to 81.1%. Again, in urban regions, it dropped from 24.1% in 1992–1993 to 19.3% in 1998–1999.

Overall, a noticeable improvement has been observed in sanitation facilities between NFHS-1 and NFHS-2. The increase in the percentage of households with flush toilets and pit toilets/ latrines indicates progress in

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sanitation infrastructure. The decrease in the percentage of households with no toilet facilities suggests efforts towards providing access to sanitation facilities, particularly in rural areas where the improvement is more significant. However, despite improvements, a considerable portion of households still lack adequate sanitation facilities, especially in rural areas. Continued efforts are needed to address this gap.

Accessible Types of Toilets in India during 2005–2006, 2014–2015, to 2019–21

The NFHS-3 (2005–06), NFHS-4 (2014–15), and NFHS-5 (2019–21) reports classify toilet types into four categories: (i) improved toilet facility not shared, (ii) unimproved toilet facility, (iii) no toilet/ open space and (iv) other toilet facility.[15,16,17] Improved toilet facility divided into six categories flush/ pour flush to pit latrine, ventilated improved pit (VIP) latrine/ biogas latrine, pit latrine with slab, twin pit, composting toilet, flush/ pour flush to piped sewer system, flush/ pour flush to septic tank. The five forms of unimproved toilets are (a) shared facility, (b) flush/ pour flush not to sewer/ septic tank/ pit latrine, (c) pit latrine without slab/ open pit, (d) dry toilet and (e) no facility/ open space/ field.

From Table 2, it can be seen that in India, there was a significant increase from NFHS-3 to NFHS-5, indicating progress in providing improved sanitation facilities that are not shared. In rural areas, the percentage increased from 17.6% in NFHS-3 to 63.6% in NFHS-5, and in urban areas, it increased from 52.8% to 80.7%. In the case of flush/ pour flush to piped sewer system, the percentage remained relatively low but showed some increase over the surveys, i.e. 6.6% in 2005–06 to 9.3% in 2019–21. Both rural and urban areas also showed slight increments from 0.6% to 2.7% and 18.8% to 22.8% from 2005–06 to 2019–21, respectively.

There was a significant increase across all areas in flush/ pour flush to septic tanks, suggesting a shift towards more modern sanitation systems. Noticeably, in rural areas, the proportion of households with such toilets expanded from 10.6% in NFHS-3 to 36.2% in NFHS-5. In urban areas, it increased from 27.6% to 47.4%.

The flush/ pour flushes to pit latrine showed an overall increment, but the growth rate slower compared to other improved facilities i.e. 4.3% in 2005–06 to 10.8% in 2019–21. In rural areas, the proportion increased from 4.1% to 13.2% and in urban areas, it increased from 4.7% to 6.1% from NFHS-3 to NFHS-5.

Generally, the use of VIP latrine/ biogas latrines, pit latrines with slabs, twin pits, and composting toilets has increased, especially in rural areas. However, the proportion of growth of these kinds of toilets showed very slow progress over the period 2005–06 to 2019–21.

The percentage of households using unimproved sanitation facilities decreased from NFHS-3 to NFHS-5. In rural areas, there was a decrease from 8.3% in NFHS-3 to 10.3% in NFHS-5. However, there was a slight increase from NFHS-4 to NFHS-5. In urban areas, there was a notable decrease from 30.0% in NFHS-3 to 12.7% in NFHS-5.

There was a consistent decrease in the usage of shared sanitation facilities across all areas and surveys. Notably, there was a significant decrease in urban areas from NFHS-3 to NFHS-5. In the case of flush/ pour flush not to sewer/ septic tank/ pit latrine, the percentage remained relatively low across all surveys and areas, with minor fluctuations. There was a decrease in usage of pit latrines without slab/ open pit, especially in rural areas, from NFHS-3 to NFHS-5. Usage of dry toilets remained minimal and relatively stable across the surveys. Also, a significant decrease in households using open spaces or fields for sanitation purposes was observed, particularly in rural areas. Other sources of sanitation facilities also showed minimal changes over the surveys.

Overall, it was observed that there was a significant improvement in sanitation facilities from NFHS-3 to NFHS-5 across all categories. The proportion of households with improved, not shared facilities has notably increased, indicating progress in access to better sanitation. The proportion of households with flush/ pour flush to piped sewer systems or septic tanks has increased, especially in urban areas, indicating urbanisation and infrastructural development. The use of pit latrines, with or without slabs, has decreased over time, suggesting a shift towards more improved sanitation facilities. The percentage of households using shared facilities has decreased, indicating a move towards individual household facilities, which is crucial for hygiene and privacy. The proportion of households with unimproved or no sanitation facility has decreased, especially in rural areas, indicating efforts to provide basic sanitation access to more households.

While improvements are observed in both rural and urban areas, rural areas still have lower access to improved sanitation facilities compared to urban areas. Overall, the data suggests progress in improving sanitation facilities in India, with a significant increase in households having access to improved, not shared facilities over the years. However, there is still a need for further efforts to bridge the gap, especially in rural areas, and ensure universal access to adequate sanitation facilities.

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Table 1.Types of Toilets in 1992–99[13-14]

Sanitation facility	NFHS-1 (1992–93)			NFHS-2 (1998–99)		
	Total	Rural	Urban	Total	Rural	Urban
Flush toilet	21.6	6.9	60.1	24.0	8.8	63.9
Pit toilet/ latrine	8.6	5.9	15.5	11.9	10.0	16.8
Other	0.1	0.1	0.3	0.1	0.1	0.0
No toilet facility	69.7	87.1	24.1	64.0	81.1	19.3

Table 2.Types of Toilets in 2005–06, 2014–15 and 2019–21[15-17]

Type of Toilet/ Latrine Facility	NFHS-3 (2005–06)			NFHS-4 (2014–15)			NFHS-5 (2019–2021)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Improved, not shared	29.1	17.6	52.8	48.4	36.7	70.3	69.3	63.6	80.7
Flush/ pour flush to piped sewer system	6.6	0.6	18.8	7.8	1.4	19.8	9.3	2.7	22.8
Flush/ pour flush to septic tank	16.1	10.6	27.6	28.7	22.1	41.1	39.9	36.2	47.4
Flush/ pour flush to pit latrine	4.3	4.1	4.7	7.2	7.7	6.3	10.8	13.2	6.1
Ventilated improved pit (VIP) latrine/ biogas latrine	0.2	0.1	0.2	0.6	0.7	0.4	0.6	0.7	0.4
Pit latrine with slab	1.9	2.2	1.5	3.9	4.6	2.7	4.6	5.4	3.0
Twin pit, composting toilet	0.0	0.0	0.0	0.1	0.1	0.1	3.8	5.3	0.8
Unimproved	15.3	8.3	30.0	12.5	9.1	18.7	11.0	10.3	12.7
Shared facility	11.5	5.3	24.2	9.1	6.1	14.9	8.4	7.4	10.5
Flush/ pour flush not to sewer/ septic tank/ pit latrine	1.6	0.2	4.6	1.5	0.5	3.0	0.9	0.7	1.5
Pit latrine without slab/ open pit	1.7	2.2	0.7	1.4	1.9	0.5	1.1	1.4	0.5
Dry toilet	0.5	0.6	0.5	0.5	0.6	0.3	0.6	0.8	0.2
No facility/ open space/ field	55.4	74.0	16.8	38.9	54.1	10.5	19.4	25.9	6.1
Other facilities	0.2	0.1	0.4	0.2	0.1	0.5	0.3	0.2	0.5

Discussion

Different Sanitation Programmes in India and Their Impact

From 1986–1999 the Central Rural Sanitation Programme (CRSP) was in operation. The scheme provided financial assistance to households for partial or complete construction of toilets. During the programme period, the household's lack of toilets has reduced to a deficient level from 69.7% of households in 1992–93 to 64.0% in 1998–99. During the CRSP plan implemented from 1986–99, the improvement of toilets was at a low level.

The average annual expansion of toilets between 1981 and 2001 was only 1%, so the programme was changed and the Total Sanitation Campaign (TSC) was implemented in 1999–2009.[18] TSC programme laid heavy emphasis on information, education and communication (IEC), human

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resource development and capacity building activities to increase awareness of best sanitation practices among rural households. During the TSC period, households without toilets decreased from 64% in 1999 to 55.4%. Between 1999 and 2009, there was minimal advancement in the TSC effort. In India, 40% of the funds allocated for the TSC programme were not utilised and government subsidies for constructing toilets were not available to households in need of toilets.[19]

Over the past ten years (2001–2011), fewer Indian homes have practised open defecation. In many Indian states, the prevalence of open defecation has dramatically increased.[20] Total Sanitation Campaign (TSC) implemented Indian villages had more access to toilets than the non-implemented villages. Because of this, there were considerably more households in the TSC villages that were aware of the "Total Sanitation Campaign" than there were in the non-TSC villages.[21]

Nirmal Bharat Abhiyan from 2009 to 2014 and Swachh Bharat Mission from 2014 to 2019 were in effect during this period the lack of toilets in households has decreased significantly from 55.4% of households in 2005–06 which has decreased by 19.4% in 2019–21. The percentage of households with access to a toilet increased from 1992 to 2021. During the past two decades, sanitation facilities have increased massively in Indian households due to different sanitation initiatives.

Swachh Bharat Mission had a major impact on the usage of toilets, issues with poor toilet design and faecal waste management have slowed the progress, leading to the continuation of open defecation.[22] Future funding for the Swachh Bharat Mission should ensure that universal toilet coverage and use is maintained, as well as safe faecal management to ensure that households continue to benefit fully from sanitation.[23]

From the state perspective, the Clean India programme has increased household toilet facilities in Rajasthan and reduced the practice of open defecation.[24] At the individual level, a 20-percentage point higher rate of open defecation than the NFHS reported is seen at the household level.[25]

Conclusion

The last two decades highlight significant progress in improving access to adequate sanitation, driven by various government initiatives and policies. The shift from basic sanitation programs like the Central Rural Sanitation Programme (CRSP) to more comprehensive campaigns such as the Total Sanitation Campaign (TSC) and the Swachh Bharat Mission reflects a concerted effort to address the country's sanitation challenges.

Over the decades, there has been a noticeable increase in the proportion of households with improved sanitation facilities, particularly in rural areas where the need is most acute. The implementation of programs emphasising education, awareness, and infrastructure development has contributed to this positive trend. Additionally, the focus on individual household toilets, as seen in initiatives like the Swachh Bharat Mission, has helped reduce the reliance on shared sanitation facilities, thereby improving hygiene and privacy for millions of households. The data also reveals a shift towards more modern sanitation systems, such as flush toilets connected to piped sewer systems or septic tanks, indicating urbanisation and infrastructural development. This transition is crucial for public health, as it reduces the risk of waterborne diseases and improves overall well-being. Despite these advancements, challenges remain, particularly in ensuring universal access to sanitation facilities and addressing disparities between rural and urban areas. While there has been progress, millions of people still lack access to basic sanitation, with open defecation remaining a prevalent issue in many parts of the country. To achieve Sustainable Development Goal 6, which aims to ensure access to water and sanitation for all, continued efforts are needed to accelerate progress, especially in reaching marginalised communities and vulnerable populations. This includes investing in infrastructure, promoting behavioural change, and strengthening governance and monitoring mechanisms to ensure sustained improvements in sanitation outcomes.

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