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Awareness and Perceptions of Sanitation Practices: Evidence from Selected Districts of Uttar Pradesh, India

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ABSTRACT: United Nations Sustainable Development Goal 6 of attaining Clean Water and Sanitation has set the blueprint for attaining collective actions for all nations and plays an inevitable role in fulfilling the agenda 2030. In this context, the paper analyses the perceptions and awareness level in the pathway of sanitation practices using multi-stage quota sampling method by collecting primary data from 600 individuals in the Ghaziabad, Meerut, Kanpur and Agra districts of Uttar Pradesh. The statistical techniques such as Cramer's V, Chi-Square, One-Way ANOVA have been invoked in the analysis. The paper concludes that perceptions and awareness of sanitation practices are associated with education and area with major brunt on individuals possessing no formal education and residing in rural areas respectively. The paper suggest an integrated and holistic policy framework by invoking the role of concerned stakeholders in building sustainable toilets such as EcoSan which operates without water and possess potential to convert excreta into useful agricultural resources.

KEYWORDS: Awareness, Perceptions, Sanitation, Sustainable Development, Uttar Pradesh.

INTRODUCTION: Sanitation is defined as the provision of facilities and services for the secure disposal of human urine and faeces according to the World Health Organization (WHO, 2004). The arena must not be overlooked as it has been the frontrunner in attaining the Sustainable Development Goals by 2030. The blueprint of these goals explicitly treated it as a separate goal (SDG 6) owing to the alarming situation experienced by the globe worldwide. This is observed as per the global projections which highlight that 2.3 billion people lacked even the most basic hygiene across the globe in present times (UNICEF and WHO, 2017). It is essential to know that water, sanitation, and hygiene are prerequisites for almost all the other Sustainable Development Goals. Therefore, the UN General Assembly declares that having access to clean water and sanitary facilities is a human right. This is the scenario at the international level.

The basic question is whether this right is exercised at the grassroot level in full spirit. For instance, at the state level, West Bengal witnessed an increase in the number of hanging toilets built by families who refuse to use sanitary toilets because they are always clogged with waste.

Similarly, rural toilets in Mumbai and Rajasthan have turned into death traps due to the use of inferior building materials (The Guardian, 2017). The unusual tree house toilets which are three times more common than hanging toilets prevail as breeding grounds for untreated waste in Mizoram. However, the situation in Uttar Pradesh is more severe. The National Commission of Safai Karamcharis (NCSK) reports that following surveys conducted in 2013

and 2018, 53,598 individuals out of which 29,923 of them in Uttar Pradesh alone were found to be involved in manual scavenging. This highlights the broken system of sanitation prominent in the Indian economy and the pressing need on selecting the state of Uttar Pradesh as the area of study.

However, this behaviour is evolving and the reason is quite intriguing. Riding a tide of growing political will and a resolute commitment from the local government, it appears that the secret is to combine district-level institutional capacity creation with technical support at the state level. This leads to the classic case of Bijnor, a district in Uttar Pradesh where Community-Led Total Sanitation (key approach of Swachh Bharat Abhiyan³) was invoked which primarily focused on behavioural change to eliminate open defecation. The district became a success model with its control room used for tracking the progress of behavioural change on real-time basis. Similar results were observed by (Lawrence et al., 2016) who invoked the triggering perceptions in an individual which led to toilet construction as a consequence of conducting CLTS program in Zambia. Transforming behaviours with improved perceptions is crucial to eliminate open defecation. Henceforth, this paper is an attempt to focus on this perspective of open defecation along with gauging the awareness levels about the Swachh Bharat Abhiyan.

LITERATURE REVIEW:

The review of literature is based on articles and papers catering to studies at both international and national levels. It has been further divided into the following categories: Section 2.1 talks about the developments in the arena of sustainable development goals. Section 2.2 discusses findings on the awareness front followed by Section 2.3 focusing on the perceptions formed.

2.1 In the light of Sustainable Development Goals

The Sustainable Development Goals Report (2023)⁴ highlights that access to clean water, proper sanitation, and good hygiene is the most fundamental necessity for human health and wellbeing. Target 6.2 of SDG 6 focuses providing everyone with access to sufficient and equitable sanitation and hygiene with a primary focus on the vulnerable sections by elimination of open defecation. Inadequacy in fulfilment of this goal impacts the macroeconomic variables such as Gross Domestic Product.

In this context, (Hutton and Chase, 2016) highlight that lack of Water Supply, Sanitation and Hygiene (WASH) initiatives have a bearing on the economy with a loss of 7 per cent in GDP. The authors are suggestive of the fact that developments in behaviour modification and service delivery show potential for service expansion to meet the Sustainable Development Goals in the Indian context. (Duncan and Barbara, 2018) argue that the scope of Sustainable Development Goals (SDG) to eliminate open defecation and possess a safely managed sanitation system is unprecedented.

³ The Swachh Bharat Mission is a Pan India initiative launched on October 2, 2014 with the goal of enhancing solid waste management and eliminating open defecation.

⁴ This report issues a special edition by providing an honest evaluation of the SDGs based on the most recent estimations and statistics.

This is because by 2030, an additional 5.6 billion people (about 1 million per day) will need securely managed sanitation, and an additional 1.3 billion people (approximately 240,000 per day) will need to transition from open to fixed defecation in a sanitation facility. For local sanitation and hygiene professionals to plan and create actions that will fulfil the SDG target, there is a correspondingly significant requirement for their holistic training and monitoring in the long run. (Bhowmick et al., 2020) demonstrates the need to shift India's water and sanitation policy away from supply augmentation and toward demand control. To track India's progress toward achieving the UN Sustainable Development Goal 6 which focuses on Clean Water and Sanitation, state-specific indices are developed to evaluate each state's performance about sanitary infrastructure and availability of clean water. Consequently, states with the best performance in SDG 6 are those without any issues with water supply and adequate toilets, hence, this calls for a paradigm shift in the arena and serves as an effective tool for policymaking.

2.2 Awareness-based Studies

(Sriram and Maheswari, 2013) recognises lack of awareness to be the major contributor to open defecation in underdeveloped nations. A well-designed hygiene education program can help raise awareness, foster understanding, and influence hygienic behaviour. To cater to this aspect, the Information, Education, and Communication (IEC) method examined the level of awareness among rural residents in two villages of Kanchipuram. However, the IEC has proved to be ineffective in creating awareness. The authors recommend a new Integrated Communication Strategy (ICS) to remedy the prevalent issue. They suggest that sanitation and hygiene practices can be improved by communicating the correct message to the public and important influencers via the right medium and at the right time. (Swain and Pathela, 2016) interviewed 190 households in the Agra district of Uttar Pradesh and Jabalpur district of Madhya Pradesh. They found that 56 per cent of respondents did not understand the need to maintain hygienic conditions, and 76 per cent of respondents were unaware of the Swachh Bharat Abhiyan. This indicates the dire need to make the masses aware of basic sanitation and its associated initiatives.

2.3 Perception-based Studies

(Whittington et al., 1993) interviewed respondents in Ghana regarding their opinions of current sanitation conditions, costs, and their familiarity with better sanitation alternatives. However, they were receiving subpar sanitation services corresponding to hefty expenditures. Families possessed the notion of being receptive to a simple, affordable and sustainable solution along with on-site remedies for their sanitation-related issues. (Lawrence et al., 2016) find that perceptions play a crucial role in transforming the attitudes and practices towards sanitation by conducting a community-led total sanitation (CLTS) initiative in Zambia. This qualitative study invoked triggering activities such as embarrassment, peer pressure and disgust which eventually encouraged the construction of toilets and handwashing at both individual and community levels. (Novotný et al., 2017) identify the perception of social sanitation norms (PSSNs) as a major component of sanitation interventions. This exploratory cross-sectional study highlights that PSSN acts as a pre-requisite with its societal influence to impact the perception of risks and rewards associated with sanitation. The mechanism of internalizing these norms affects the durability of sanitation outcomes.

METHODS:

The paper is based on the primary data collected from 600 individuals from Ghaziabad, Meerut, Kanpur and Agra districts in the state of Uttar Pradesh respectively. These districts have been characterised using the Swachh Survekshan, 2023⁵. A multi-stage Quota sampling method has been used to select the representative sample of 600 sampling units. Table 1 represents the Multi-stage Quota sampling method. All 75 districts in Uttar Pradesh have been divided into two different categories of sanitation practices adopted based on their sanitation performances. The reason for selecting two high and low performing districts is to make a comparative analysis about the status of sanitation practices, the level of awareness and perceptions formed based on their respective performances listed in the Survekshan.

Table 1: Sampling Strategy of Primary Survey (N=600)

S.No.	Performance on Sanitation Practices	Districts selected from Uttar Pradesh	Sample Quota*	Sample Quota for Urban and Rural areas*
1.	High	Ghaziabad	150	Urban = 75 Rural = 75
2.	High	Meerut	150	Urban = 75 Rural = 75
3.	Low	Agra	150	Urban = 75 Rural = 75
4.	Low	Kanpur	150	Urban = 75 Rural = 75

Source: Swachh Survekshan (2023) and SQUAT (2019)

⁵ This survey exercise is undertaken by Government of India to evaluate rural and urban areas on cleanliness.

* Author's selection of sample quota

Under the second stage, two districts belonging to each level of sanitation practices have been selected for the study. The third stage randomly assigns a quota of 150 for each district. The fourth stage fixes a quota of 75 for rural areas and 75 for urban areas in each district. The fifth and last stage randomly selects individuals from rural and urban areas in the respective districts.

Post deciding the sampling strategy, the data is collected using the primary survey. This involves conducting interviews for 150 individuals residing in Ghaziabad (75 in rural and urban areas each) using a structured Google form questionnaire. This was an in-person interview conducted by randomly selecting individuals from rural as well as urban areas. The questionnaire comprises the following sections - The demographic, economic, and social profile of the respondents including age, gender, religion, income, social position, educational background, and area was catered to in Section I. Further, the accessibility of sanitation practices was assessed in Section II. Moving further, Sections III, IV and V talk about the perceptions, awareness and challenges faced in using these sanitation practices.

RESULTS AND DISCUSSIONS:

The paper invokes an in-depth analysis of sanitation practices in terms of the level of awareness and perceptions formed in their implementation across socio-economic aspects. Table 1 represents the socio-economic profile of the respondents.

Table 2: Socio-Economic Profile of the Respondents (N=600)

Variable	Sub-variable	Frequency (in Percentage)
Gender	Male	285 (47.5)
	Female	315 (52.5)
Social Class	General	263 (43.8)
	Other Backward Class	203 (34.8)
	Scheduled Caste	83 (13.8)
	Scheduled Tribe	51 (8.5)
Area	Rural	300 (50)
	Urban	300 (50)
Education	Illiterate	140 (23.3)
	Primary	230 (38.3)
	Secondary	89 (14.8)

	Higher Secondary	87 (14.5)
	Graduation and above	54 (9)

Source: Author's Calculations from Primary Survey

Most of the respondents belong to the general category (43.8 per cent), followed by OBC (34.8 per cent), SC (13.8 per cent) and ST (8.5 per cent). The sample population is evenly spread across places of residence, that is, urban (50 per cent) and rural (50 per cent) in all the four districts. The sample population is skewed towards the individuals with primary schooling which comprise 38.3 per cent of the respondents while merely 9 per cent pursue graduation and higher degree. This is likely to affect the awareness and perceptions of individuals regarding sanitation.

Open Defecation is the practice of defecating in open spaces and not in closed spaces such as toilets. It is an affront to dignity and puts the health of the community and the nourishment of children at risk. As per the World Health Organisation (2022), 11.1 per cent of the population practise open defecation in India with 17.01 per cent in rural areas and 0.55 per cent in urban areas with Agra and Kanpur being the major contributors. Similarly, the primary data in Figure 1 also reflects the same story with both these districts practising 66.66 per cent and 80.66 per cent open defecation respectively in contrast to top-performing ones with 44 per cent and 50.66 per cent respectively. This is worrisome and is reflective of the fact that the place of residence does alter the choice of whether to practice open defecation or to use a toilet. This might be plausible due to lack of awareness pertaining in Agra and Kanpur.

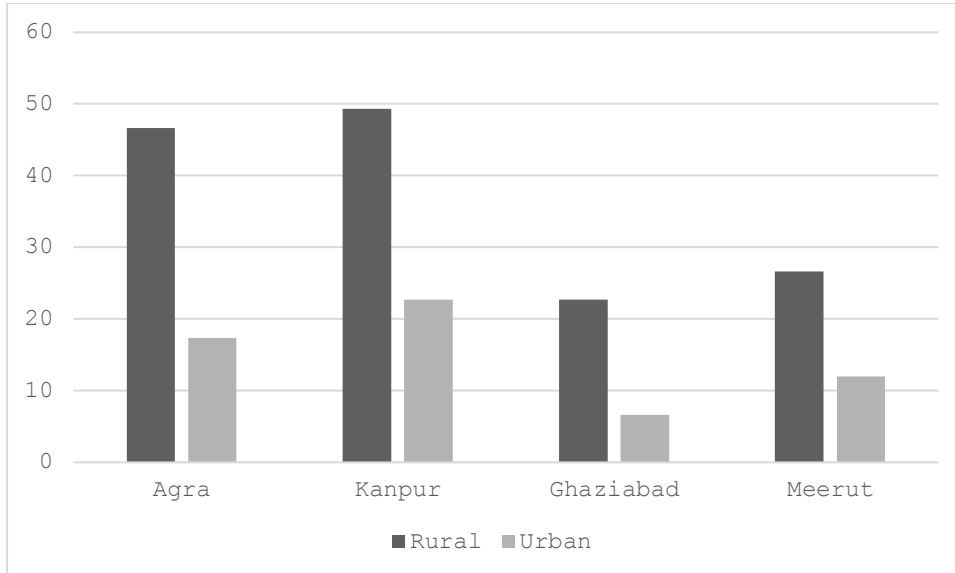


Figure 1: Status of Open Defecation in Selected Districts of Uttar Pradesh

Table 3: Results from three-point Likert Scale of Awareness level about Swachh Bharat Abhiyan (in per cent)

Statements	Scale	Agra		Kanpur		Ghaziabad		Meerut	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Not Aware	1	43.33	17	47.55	6	11.55	8	18	5.72
Partially Aware	2	8.67	13	7.45	10	6	11.34	6	13.15
Fully Aware	3	5	13.03	11	18	10	53.11	6	51.13

Source: Author's Calculations from Primary Survey

On the awareness front, the following responses have been recorded using three- point Likert scale across all the four districts in Table 2. The scale ranges from 1 to 3 with the former value assigned to individuals not aware about the Swachh Bharat Abhiyan and the latter to the ones fully aware about the initiative.

Agra and Kanpur highlights total of 60.33 per cent and 53.55 per cent unaware individuals which is quite alarming. On the contrary, Ghaziabad and Meerut records total of 63.11 per cent and 57.13 per cent individuals who are fully aware about the Swachh Bharat Abhiyan. This complements the fact that districts with low performance in sanitation are the ones with high proportion of unaware individuals (Swain and Pathela, 2016). The association of awareness level with the socio-economic variables is the next thing which demands attention to infer the knowledge about sanitation practices. This is captured in Table 3 which depicts such an association using the Chi-Square test. Cramer's test has also been performed to analyse the strength of the association.

Table 4: Association between awareness level about Swachh Bharat Abhiyan and socio-economic variables (N=600)

Variable	Chi-Square Value	Significance	Cramer's Value
Area	9.425* ⁶	0.009	0.249*
Education	12.895*	0.005	0.292*
Social Class	9.565** ⁷	0.048	0.251**

Source: Author's Calculations from Primary Survey

⁶ * denotes significance at 1 per cent

⁷ ** denotes significance at 5 per cent

It is observed that awareness level is significantly associated with area, education and social class. The level of awareness is low for individuals residing in rural areas with no schooling and belonging particularly to Scheduled Caste and Scheduled Tribes. The strength of association for awareness level is relatively higher for education (0.292) in comparison to social class (0.251) and area (0.249) respectively.

On the other hand, Table 4 represents the responses recorded using five-point Likert scale for the perceptions formed about practicing open defecation. The values ranges on a scale of 1 to 5 with individuals strongly disagreeing with open defecation ranked at 1 and those strongly agreeing with it ranked at 5 respectively. It is observed that 59 per cent individuals residing in Agra and 61.32 per cent in Kanpur strongly agree with the practice of open defecation. This is quite contradictory to the perceptions formed by individuals in Ghaziabad and Meerut districts with 78.32 per cent and 62.53 per cent respectively. This is plausible and aligns with the hypothesis that districts performing poor in sanitation are the ones encouraging the practice of open defecation and have strong perceptions about the same.

To have an in-depth association analysis between the perceptions formed and socio-economic variables, one-way ANOVA test is used in Table 5. The ANOVA test simply denotes whether the means are equal or not. It has been observed that perceptions are significantly associated with area and education with p-values of 0.000 and 0.001 respectively which is lower than the significance value at 1 per cent. This implies that the mean of rural and urban respondents is unequal in terms of the perceptions they possess. Similar is the case for those having formal schooling and those lacking it. The ones with formal schooling are more likely to attain awareness by simply attending their respective institutions which conduct such campaigns and initiatives frequently. All this indicates that the perceptions vary significantly across areas and education.

Table 5: Results from five-point Likert Scale of Perceptions formed about open defecation (in per cent)

Statements	Scale	Agra	Kanpur	Ghaziabad	Meerut
Strongly Disagree	1	4.81	9.81	78.32	62.53
Disagree	2	12.36	4.11	11.33	13.71
Neither Agree nor Disagree	3	12.5	6.33	0.54	0.05
Agree	4	11.33	18.43	0	5.81
Strongly Agree	5	59	61.32	9.81	17.9

Source: Author's Calculations from Primary Survey

Table 6: One-way ANOVA and Bartlett’s Test for Perceptions formed and socio-economic variables (N=600)

Variable	Chi-Square Value	Significance (Bartlett’s Test)	Significance (ANOVA)
Gender	0.3295	0.988	0.411
Area	28.4599* ⁸	0.0000	0.000
Education	7.5689*	0.056	0.001

Source: Author’s Calculations from Primary Survey

Thereafter, Bartlett’s test of Sphericity was performed to identify the strength of correlations among variables. It is an indication of homoscedasticity (equal variance). Bartlett’s test value is significant since its p-value as shown in Table 4 is 0.000 (at 1 per cent) and 0.056 (at 10 per cent) for area and education respectively. Hence, Table 4 depicts that the mean and variances of the socio-economic variables such as area and education significantly differ concerning the perceptions formed by the respondents. This is quite plausible as urban residents have different notions of sanitation in comparison to their peers, that is, rural residents. The difference purely stems from their place of residence and is very effective in impacting their decisions associated with sanitation.

CONCLUSION:

Collating the findings from the sampled survey indicates that sanitation practices are greatly influenced by perceptions formed by an individual and their level of awareness about their know-how of the arena. These form an indispensable part in affecting cleanliness and hygiene at both individual and global levels. The differential impact of perceptions and awareness varying greatly across rural and urban residents leading to the former practising relatively high open defecation is an eye-opener. One plausible reason for this could be their notions of purity which hinders the toilet construction in proximity to their respective place of residence. For the rural residents, specifically, lack of awareness emerges as the prominent factor contributing to open defecation. The incorporation of such perceptions will encourage in spreading of awareness with integrated efforts at the state and panchayat levels along with the national level.

At the panchayat (local) level, initiatives such as conducting workshops to spread awareness regarding open defecation, displaying street play and films to highlight the importance of sanitation and hygiene in our daily lives can play crucial role in reducing open defecation. The Anganwadi workers should be encouraged to conduct weekly meetings so that good sanitation practices are instilled in people residing in urban areas.

⁸ * Denotes significance at 1 per cent level

The provision of alternative and sustainable toilets with innovative techniques such as EcoSan can improve the present scenario. An integrated and holistic framework is required to make all the stakeholders equally responsible for their actions and generate awareness of their respective consequences.

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