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Availability and Perceived Adequacy of Basic Infrastructure among Muslim Households in Shravasti and Bahraich, Uttar Pradesh: A Cross-Sectional Study

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ABSTRACT

Background: Basic infrastructure is an important enabling condition for preventive health, particularly in rural and socio-economically disadvantaged settings. Adequate and functional infrastructure can support healthier living conditions and facilitate access to essential services and health-related information. **Objective:** To examine the availability, accessibility, and perceived adequacy and usability of basic infrastructure among Muslim households in two Aspirational Districts of Uttar Pradesh- Shravasti and Bahraich. **Methods:** A community-based cross-sectional household survey was conducted among 238 Muslim households. Data were collected on household electricity, Gram Panchayat-level internet connectivity, all-weather road access under the Pradhan Mantri Gram Sadak Yojana (PMGSY), Individual Household Latrines (IHHL), safe drinking water, functioning Common Service Centres (CSCs), and government-supported housing. Respondents' perceptions regarding the adequacy and usability of major infrastructure facilities were also assessed. Descriptive statistics and district-wise comparisons were performed, with statistical significance considered at $p<0.05$. **Results:** Overall, 95.4% of households reported access to electricity and 92.4% reported access to safe drinking water at a minimum level of 40 litres per capita per day. Access to IHHLs was reported by 65.5% of households, while 50.0% reported all-weather PMGSY road access to their habitations. Only 15.5% reported access to a functioning CSC. Gram Panchayat-level internet connectivity was reported by 100.0% of households in Shravasti compared with 82.1% in Bahraich. Significant district-level differences were observed in respondents' perceptions of the adequacy and usability of roads, drinking water, sanitation, electricity, housing, and CSCs/digital access ($p<0.05$). **Conclusion:** The findings describe reported infrastructure availability and perceived service adequacy; health outcomes were not assessed. While coverage of electricity and safe drinking water was relatively high, reported access to sanitation, road connectivity, and functioning digital service centres was lower; access to government-supported housing was also limited. Strengthening the quality, accessibility, functionality, maintenance, and sustainability of basic infrastructure can help create an enabling environment for preventive health and improve living conditions in Aspirational Districts.

Keywords: Basic Infrastructure; Infrastructure Access; Aspirational Districts; Shravasti; Bahraich.

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Introduction

Health is shaped not only by access to medical care but also by the social, economic, and physical conditions in which people live. The World Health Organization (WHO) identifies these conditions as social determinants of health, emphasising that housing, living conditions, and access to essential resources influence health and health inequalities.[1] Consequently, disease prevention requires attention not only to healthcare services but also to the physical environments that enable households to maintain healthy living conditions.

Basic infrastructure, including electricity, safe drinking water, sanitation, housing, road connectivity, and digital connectivity, constitutes an important component of this enabling environment. Water, sanitation, and hygiene (WASH) are particularly relevant to disease prevention because inadequate water and sanitation expose populations to preventable risks, including diarrhoea and other infectious diseases.[2,3] Similarly, adequate housing is an important component of primary prevention, as improvements in housing conditions can reduce health risks and improve quality of life [4]. Road connectivity, electricity, and digital infrastructure can further facilitate physical access to health facilities, information, communication, and public services. Thus, the public-health significance of infrastructure depends not simply on its provision, but also on its accessibility, functionality, reliability, and usability.

This perspective is particularly relevant to India's Aspirational Districts Programme (ADP), launched in January 2018 to transform 112 relatively underdeveloped districts through convergence, collaboration, and competition. The programme monitors five broad themes, including Health and Nutrition and Basic Infrastructure [5, 6]. However, infrastructure coverage alone does not necessarily ensure effective service delivery; facilities may remain inadequate, unreliable, or difficult to use.

Shravasti and Bahraich provide an important empirical setting for examining household-reported infrastructure availability and perceived adequacy. Using household-level survey data, the present study examines electricity, Gram Panchayat-level internet connectivity, PMGSY road access, IHHL, safe drinking water, Common Service Centres, and government-supported housing. It assesses both availability and perceived adequacy and usability, with potential public-health implications discussed in the context of Aspirational Districts.

Literature Review

Health is shaped not only by access to medical care but also by the social, economic, and physical conditions in which people live. The World Health Organization (WHO) identifies these conditions as social determinants of health and emphasises that housing, living conditions, and access to essential resources influence health and health inequalities (WHO, 2024)[1]. Accordingly, preventive health requires attention not only to healthcare services but also to the household and community environments that support healthy living. Basic infrastructure including electricity, safe drinking water, sanitation, housing, road connectivity, and digital connectivity can therefore be viewed as an important enabling component of preventive health.

Water, sanitation and hygiene (WASH) are particularly relevant to disease prevention. Inadequate water and sanitation increase exposure to infectious diseases, whereas safe and sufficient services can reduce environmental health risks[2,3]. Indian household studies have also demonstrated that the availability of infrastructure and household practices are closely linked. Kuberan et al. (2015) [7] identified gaps in rural household sanitation and water treatment practices, while Dadhich et al. (2022) [8] found that toilet ownership, toilet water availability, and literacy were associated with greater toilet use. These findings suggest that the public-health value of infrastructure depends not only on its presence but also on its adequacy and effective use. The present study therefore distinguishes between reported availability and respondents' perceptions of adequacy and usability; importantly, it does not measure actual toilet-use behaviour.

Electricity, roads, housing, and digital infrastructure represent additional dimensions of the household environment relevant to preventive health. Evidence from India indicates that reliable electricity supply is important for health service delivery. Mani et al. (2021) [9] found that regular electricity supply at primary health centres was associated with greater provision of delivery and vaccination services, while Shastry and Rai (2021)[10] reported substantial reductions in deliveries and in inpatient and outpatient services at under-electrified facilities. These findings highlight the importance of reliability and functionality rather than nominal access alone. Likewise, road connectivity can reduce physical barriers to accessing essential services, while housing quality and digital access can influence living conditions, communication, access to information, and interaction with public services[4]. The present study accordingly examines these infrastructure dimensions as components of the household environment rather than as isolated development facilities.

This perspective is particularly relevant to India's Aspirational Districts Programme (ADP), launched in January 2018 to accelerate the transformation of 112 relatively underdeveloped districts through convergence, collaboration, and competition. The programme monitored 49 Key Performance Indicators across five broad themes, including Health and Nutrition and Basic Infrastructure [11, 12]. An assessment by the Institute for Competitiveness reported progress in Health and Wellness and Basic Infrastructure, including improvements associated with mission-mode programmes such as Swachh Bharat and Saubhagya, while also noting variation across sectors and indicators[13]. These programme-level assessments provide an important policy context, but they do not establish that household-level changes were caused by ADP.

Existing research has addressed infrastructure and health using both household and district-level evidence. For example, Chowdhury et al. (2017)[14] examined housing, water, and sanitation using household data from multiple Indian districts, while Agarwal and Mishra (2024) [15] evaluated ADP-related health outcomes using district-level NFHS data. However, the literature reviewed for the present study provides less evidence on the combined assessment of multiple basic infrastructure dimensions, household perceptions of adequacy and usability, and their preventive-health relevance within individual Aspirational Districts. The distinction between infrastructure availability and perceived adequacy/usability is also important because physical coverage does not necessarily indicate effective service conditions.

The focus on Muslim households provides a defined population perspective for this investigation. The Sachar Committee examined the presence, accessibility, and utilisation of social and physical infrastructure among Muslims and other socio-religious groups, including roads, health facilities, electricity, water, sanitation, transport, and communication, and identified substantial regional variation (Prime Minister's High-Level Committee, 2006)[16]. This provides a contextual basis for examining infrastructure among Muslim households without assuming uniform religious disadvantage. Accordingly, the present study examines Muslim households in Shravasti and Bahraich, two Aspirational Districts of Uttar Pradesh, using household-level empirical data on electricity, Gram Panchayat internet connectivity, PMGSY road access, IHHL, safe drinking water, Common Service Centres, and government-supported housing. The study further considers respondents' perceptions of infrastructure adequacy and usability. It therefore contributes evidence at the intersection of basic infrastructure, preventive health, household experience, the ADP context, and Muslim households, while recognising that its cross-sectional design does not establish causal effects of infrastructure, ADP, or religion on health outcomes.

Methodology

This study provides a descriptive analysis of the availability of basic infrastructure among Muslim households in the Shravasti and Bahraich districts of Uttar Pradesh, both designated Aspirational Districts under the ADP. As set out in the Introduction, this is a study of availability within the ADP context rather than an evaluation of ADP's causal impact; it follows a primarily quantitative approach, combining structured household interview data.

***Study Design and Study Area*:** The present study employed a community-based cross-sectional design to examine reported availability of infrastructure and perceived adequacy among Muslim households in two Aspirational Districts of Uttar Pradesh, namely Shravasti and Bahraich. Fieldwork was conducted from March to July 2025 in selected blocks of the two districts: Ikauna, Gilaula, and Bhinga in Shravasti, and Chittaura, Rizia, Hujurpur, and Jarwal in Bahraich. The two districts were purposively selected because both were included among Uttar Pradesh's Aspirational Districts under the Aspirational Districts Programme (ADP), which places Basic Infrastructure as one of its core development themes [11, 12, 6]. The study was designed to assess the availability of selected basic infrastructure facilities and respondents' perceptions regarding their adequacy and usability. A household-level approach was adopted because the availability and functionality of infrastructure are experienced directly by households and may influence their living conditions and access to essential services.

***Study Population and Unit of Analysis*:** The study population comprised Muslim households residing in the selected areas of Shravasti and Bahraich districts. The household was the principal unit of analysis. Information was collected from respondents aged ≥18 years representing their respective households regarding the availability and accessibility of selected basic infrastructure facilities and their perceptions of the adequacy and usability of these facilities.

***Sample Size and Sampling Procedure*:** A total of 238 households were included in the study, comprising 54 households from Shravasti and 184 households from Bahraich. A stratified random sampling approach was used to obtain representation from the selected study areas. The sampling procedure involved selecting three administrative blocks and seven Gram Panchayats from Shravasti and four administrative blocks and eleven Gram Panchayats from Bahraich, followed by the selection of households. Probability Proportional to Size (PPS) sampling was used at the village level so that villages with larger populations contributed proportionately to the household sample.

The sample size determination was based on a two-proportion comparison framework, with a 5% significance level and 80% power. The study was designed to permit comparison of infrastructure-related indicators between the two districts.

***Data Collection*:** Primary data were collected through a structured household survey schedule. The schedule included questions on the availability and accessibility of major basic infrastructure facilities, as well as respondents' perceptions of their adequacy and usability. The infrastructure dimensions examined included: household electricity connection; Gram Panchayat-level internet connectivity; access to an all-weather road under the Pradhan Mantri Gram Sadak Yojana (PMGSY); construction of PMGSY roads according to the sanctioned plan; access to an Individual Household Latrine (IHHL); access to at least 40 litres per capita per day (LPCD) of safe drinking water; availability of a functioning Common Service Centre (CSC); and receipt of a pucca house under a government housing scheme.

These indicators correspond directly to the basic infrastructure dimensions assessed in the household survey (Based on ADP's basic infrastructure indicators, NITI Aayog, 2018) [11].

***Variables and Measurement*:** The study assessed selected basic infrastructure indicators. Infrastructure availability was assessed using categorical responses. For example, electricity availability was assessed through household electricity connections, while digital infrastructure was assessed through Gram Panchayat internet connectivity and functioning CSCs. Physical accessibility was assessed through all-weather road access under PMGSY, while environmental and household infrastructure included sanitation, safe drinking water, and housing.

In addition to recording reported infrastructure availability, the study assessed respondents' perceptions of the adequacy and usability of major facilities. Roads, drinking water, toilets/sanitation, electricity, housing, and CSCs/digital access were assessed using a five-point scale ranging from Very Poor (1) to Very Good (5). This distinction between availability and perceived adequacy was incorporated to examine whether the presence of infrastructure corresponded to satisfactory household-level service conditions.

***Conceptual Approach*:** Conceptually, the study treats basic infrastructure as an enabling component of the household environment, recognizing that adequate and usable electricity, drinking water, sanitation, housing, road connectivity, and digital infrastructure may support healthier living conditions and access to essential services; however, these pathways are used as a conceptual rationale and are not tested as causal or mediating relationships in the present cross-sectional study:

Basic Infrastructure → Living Conditions and Accessibility → Access to Essential Services and Information → Preventive Health Environment

Accordingly, electricity, safe drinking water, sanitation, housing, road connectivity, and digital infrastructure are treated as interconnected components of the household environment rather than as isolated development indicators.

***Statistical Analysis*:** Data were coded and analysed using IBM SPSS Statistics Version 28. Frequencies and percentages described infrastructure availability and perceived adequacy/usability. District-wise categorical comparisons used Pearson's χ^2 test when assumptions were satisfied; sparse or zero-cell counts were assessed using appropriate exact or simulation-based procedures. Five-point ordinal ratings (Very Poor–Very Good) were analysed using appropriate ordinal or distribution-free procedures. Given clustering of households within villages, potential design effects were considered when interpreting statistical significance. Analyses were exploratory, with $p<0.05$ as the significance threshold. Non-significant findings were not interpreted as

***Ethical Considerations*:** The study involved collecting information from households through a structured survey. Participation was voluntary, and respondents were informed about the purpose of the study before data collection. Information obtained from respondents was treated confidentially and was used exclusively for research purposes.

***Methodological Rationale*:** The household-level empirical design was considered appropriate because district-level infrastructure statistics may not fully capture households' experiences with accessibility, adequacy, and usability. The present methodology therefore combines household-reported indicators of infrastructure availability with respondents' perceptions of service adequacy, allowing the study to examine basic infrastructure from both coverage and a user-oriented perspective. This approach is particularly relevant in the context of Aspirational Districts, where improvements in infrastructure need to be considered not only in terms of physical provision but also in terms of their functional contribution to living conditions and preventive health.

Results

This section presents the empirical findings on the availability, accessibility, and perceived adequacy of basic infrastructure among households in Shravasti and Bahraich. The analysis covers electricity, internet connectivity, road access, sanitation, safe drinking water, Common Service Centres, and housing, with district-wise comparisons highlighting variations in the provision and usability of infrastructure.

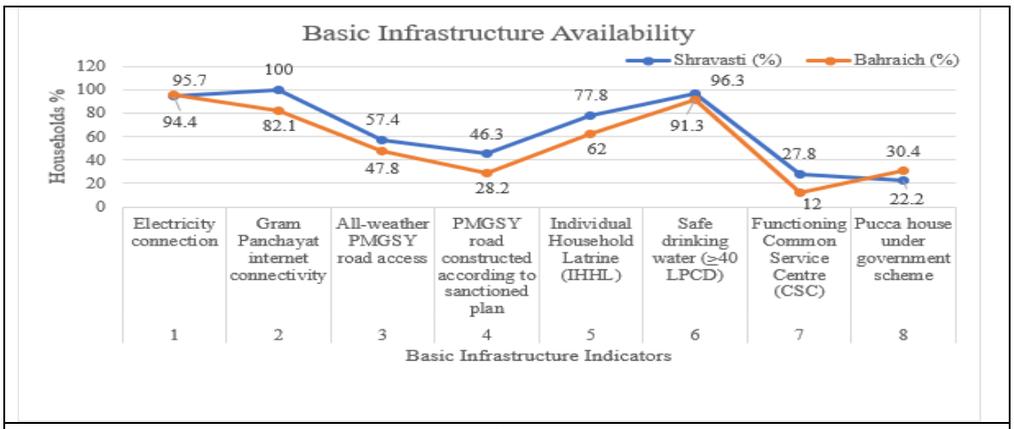
Table-1: Household-reported availability of Basic Infrastructure by district

Statements		Name of Districts				Total		χ^2 & P value
		Shravasti		Bahraich				
		No.	%	No.	%	No.	%	
Distribution of households with an electricity connection	Yes	51	94.4	176	95.7	227	95.4	χ^2=0.14 P =0.71
	No	3	5.6	8	4.3	11	4.6	
Household reports of Gram Panchayat internet connectivity.	Yes	54	100.0	151	82.1	205	86.1	χ^2=11.24 P =0.004
	No	00	0.0	4	2.2	4	1.7	
	Can't say	00	0.0	29	15.8	29	12.2	
Distribution of households' habitation that has access to an all-weather road under the PMGSY*	Yes	31	57.4	88	47.8	119	50.0	χ^2=5.19 P =0.08
	No	23	42.6	81	44.0	104	43.7	
	Can't say	00	0.0	15	8.2	15	6.3	
All-weather roads have been constructed in their area under PMGSY as per the sanctioned plan.	Yes	25	46.3	52	28.26	77	32.35	χ^2=2.92 P =0.09
	No	29	53.7	132	71.7	161	67.65	
Distribution of households that have access to an Individual Household Latrine (IHHL)	Yes	42	77.8	114	62.0	156	65.5	χ^2=4.63 P =0.03
	No	12	22.2	70	38.0	82	34.5	
Distribution of households that have access to at least 40 LPCD safe drinking water	Yes	52	96.3	168	91.3	220	92.4	χ^2=1.85 P =0.40
	No	00	0.0	4	2.2	4	1.7	
	Can't say	2	3.7	12	6.5	14	5.9	
Household reports of functioning as Common Service Centre in their Gram Panchayat	Yes	15	27.8	22	12.0	37	15.5	χ^2=21.89 P =0.00
	No	36	66.7	109	59.2	145	60.9	
	Can't say	3	5.56	53	28.8	56	23.5	
Distribution of households that received a pucca house under any Gov. Housing Scheme due to being shelter-less or living in a kuchha house	Yes	12	22.2	56	30.3	68	28.6	χ^2=4.06 P =0.04
	No	42	77.8	128	69.6	170	71.4	

PMGSY= *Pradhan Mantri Gram Sadak Yojana

The distribution of respondents by the availability of basic infrastructure in the study districts is shown in Table-1. Electricity connections were reported by 94.4% of households in Shravasti and 95.7% in Bahraich. Gram panchayat internet connectivity was reported by 100% of respondents in Shravasti, and 82.1% in Bahraich. Overall, 50% of households reported that their habitations had access to an all-weather road under PMGSY, with slight variations: 57.4% in Shravasti and 47.8% in Bahraich district. Among households with access to an all-weather road under the PMGSY, only 32.35% had been constructed as per the sanctioned plan, with 46.3% in Shravasti district and 28.26% in Bahraich district. About two-thirds of households had the individual household latrine (IHHL), with 77.8% in Shravasti district and 62% in Bahraich district. As per access to at least 40 LPCD of safe drinking water, overall, 92.4% of households had this facility, with slight variation: 96.3% in Shravasti district and 91.3% in Bahraich district. Only 15.5% of households reported a functioning Common Service Centre in their Gram Panchayat across the two districts. In the Shravasti district, this facility was reported by 27.8% of respondents, compared to 12% in Bahraich. Overall, 28.6% of households had received a pucca house under any government housing scheme due to being shelter less or living in a kuchha house, with percentages of 22.2% and 30.4% in the Shravasti and Bahraich districts, respectively.

Figure-1: District-wise comparison of basic infrastructure availability among households in Shravasti and Bahraich.



Source: *Household survey data, Shravasti and Bahraich*

Table -2: Respondent rating of infrastructure adequacy and usability by district

Facilities	Very Poor (1)		Poor (2)		Fair (3)		Good (4)		Very Good (5)		χ^2 & P value
	D1	D2	D1	D2	D1	D2	D1	D2	D1	D2	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No .(%)	No. (%)	No. (%)	No. (%)	
Roads	6 (11.1)	13 (7.1)	29 (53.7)	57 (31.0)	10 (18.5)	78 (42.4)	9 (16.7)	34 (18.5)	0 (0.0)	2 (1.1)	13.92 0.008
Drinking water	00	00	00	6 (3.3)	17 (31.5)	51 (27.7)	36 (66.7)	97 (52.7)	1 (1.9)	30 (16.3)	10.12 0.018
Toilets/ Sanitation	00	00	20 (37.0)	32 (17.4)	24 (44.4)	94 (51.1)	10 (18.5)	53 (28.8)	00	5 (2.7)	10.88 0.012
Electricity	2 (3.7)	00	28 (51.9)	54 (29.3)	16 (29.6)	80 (43.5)	8 (14.8)	48 (26.1)	00	2 (1.1)	17.78 0.001
Housing (e.g., PMAY)	00	00	26 (48.1)	36 (19.6)	23 (42.6)	83 (45.1)	5 (9.3)	64 (34.8)	00	1 (0.5)	22.83 0.000
CSCs/ Digital Access	3 (5.6)	2 (1.1)	25 (46.3)	23 (12.5)	19 (35.2)	64 (34.8)	7 (13.0)	80 (43.5)	00	15 (8.2)	42.65 0.000

Table-2 presents the district-wise distribution of respondents' opinions on the adequacy and usability of basic infrastructure facilities in the study districts. In Shravasti, no respondents rated the listed facilities as very good, except drinking water, which received this rating from 1.9% of respondents. In the Bahraich district, 16.3% of households have very good drinking water facilities, followed by 8.2% with CSCs/digital access, while the remaining facilities range from 0.5% to 2.7%. All facilities listed in the table were found to differ significantly between the two study districts ($p<0.05$).

Discussion

The present study examined reported availability and perceived adequacy and usability of basic infrastructure among Muslim households in Shravasti and Bahraich. The findings show a mixed infrastructure profile: some facilities were widely available, whereas gaps remained in sanitation, all-weather road access, functioning Common Service Centres (CSCs), and government-supported housing. The results also show that infrastructure coverage and perceived adequacy are distinct dimensions, supporting the importance of assessing both in household-level studies.

Electricity was reported by more than 94% of households in both districts, with no statistically significant difference between districts. This high coverage indicates broad access to household electricity within the study population. However, previous evidence suggests that the public-health relevance of electricity depends on reliability rather than connection alone. Mani et al. (2021)[9] found that regular electricity supply at primary health centres was associated with greater provision of delivery and vaccination services, while Shastry and Rai (2021)[10] reported lower provision of several services at under-electrified facilities. The present survey measured household access and perceived adequacy/usability, but did not assess supply reliability; therefore, these findings provide context rather than evidence of a health effect.

Digital infrastructure showed greater district variation. Gram Panchayat-level internet connectivity was reported more frequently in Shravasti than Bahraich, while functioning CSCs were reported by only a minority of households. This distinction indicates that connectivity does not necessarily translate into access to functional digital services. The relatively limited availability of CSCs may restrict household interaction with government and digital services, although the present study did not directly measure digital service utilization or access to health information.

Road connectivity was reported by half of the surveyed habitations, with no statistically significant evidence of district differences. The finding indicates that all-weather connectivity remains incomplete among the surveyed households. Respondents were also asked whether PMGSY roads had been constructed according to the sanctioned plan; this was a respondent-reported perception and was not independently verified through administrative or engineering records. It should therefore be interpreted as reported awareness of implementation rather than technical compliance. The survey did not measure travel time to health facilities or actual healthcare utilization, so the health implications of road access cannot be directly established.

Sanitation showed a significant district difference in reported IHHL availability, with higher access in Shravasti. Evidence from Dadhich et al. (2022)[8] indicates that toilet ownership, water availability within toilets, and literacy were associated with toilet use, illustrating that provision and utilization are not synonymous. However, the present study did not measure toilet-use behaviour; its findings are limited to reported access to IHHL and perceived adequacy/usability. Similarly, access to safe drinking water was high in both districts. The survey used the 40-LPCD threshold specified in the study instrument, but water quantity was not directly measured, and water quality was not laboratory tested. Thus, these results represent respondent-reported access rather than independently verified water safety.

Government-supported pucca housing was reported by a minority of households. Non-receipt of housing assistance cannot be interpreted as evidence of inadequate housing or unmet eligibility, as current housing conditions, scheme eligibility, and unmet need were not directly assessed. Housing should therefore be interpreted as an indicator of reported programme-supported infrastructure rather than a direct measure of housing quality.

Perceived adequacy and usability differed significantly between the districts across all assessed infrastructure dimensions in the reported analyses. These differences reinforce the distinction between the physical presence of infrastructure and households' experience of its adequacy and usability. Nevertheless, the statistical results should be interpreted with caution because some categories had sparse or zero observations and some infrastructure facilities were shared at the community level. Appropriate exact or design-adjusted analyses should therefore be considered before finalising significance claims.

Limitations: Several limitations should be acknowledged. First, the availability, adequacy, and usability of infrastructure were largely based on respondents' reports and perceptions and were not independently verified through technical inspections; the water indicator was not laboratory-validated. Second, the study included only Muslim households from selected blocks in Shravasti and Bahraich, limiting geographic generalisability and precluding conclusions about religion-based disparities, as no non-Muslim comparison group was included. Third, the cross-sectional design captures conditions during the March–July 2025 fieldwork period and cannot establish temporal or causal effects of infrastructure or the Aspirational Districts Programme. Fourth, households may share roads, water sources, and digital or community facilities, creating potential clustering that may affect statistical independence. Fifth, some measures involve uncertainty, including the 40-LPCD threshold, “Cannot Say” responses, and respondent-reported conformity of PMGSY roads with sanctioned plans. Finally, the study did not directly measure preventive-health outcomes; therefore, it provides evidence on reported infrastructure conditions and perceived adequacy/usability rather than demonstrating effects on health.

Overall, the findings indicate that infrastructure assessment in Aspirational Districts should consider not only coverage but also adequacy, usability, and functionality. The study provides household-level contextual evidence from Shravasti and Bahraich and identifies areas for further investigation without attributing observed differences to ADP or religion.

Conclusion

The study demonstrates substantial variation in the reported availability of basic infrastructure and in perceived adequacy among Muslim households in Shravasti and Bahraich. While electricity and safe drinking water were relatively widely available, gaps remained in sanitation, all-weather road connectivity, functioning CSCs, and government-supported housing. Significant inter-district differences in perceived infrastructure adequacy and usability highlight the importance of assessing infrastructure beyond physical coverage. Strengthening functionality, quality, maintenance, accessibility, and sustainability should therefore complement further infrastructure expansion. The findings provide household-level contextual evidence relevant to preventive health, but the cross-sectional design and absence of direct health outcomes preclude causal conclusions regarding infrastructure, ADP, or religion-based disparities.

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References

1. World Health Organization. Operational framework for monitoring social determinants of health equity. World Health Organization. WHO operational framework, 2024.
2. World Health Organization. Drinking-water. Official WHO Drinking-water fact sheet, 2023a.
3. World Health Organization. Burden of disease attributable to unsafe drinking-water, sanitation and hygiene: 2019 update. Official WHO report, 2023b.

4. World Health Organization. WHO housing and health guidelines. World Health Organization. Official WHO Housing and Health Guidelines, 2018.
5. NITI Aayog. Aspirational districts: Unlocking potentials. Government of India. NITI Aayog – Aspirational Districts: Unlocking Potentials, 2018.
6. NITI Aayog. Stories of change: Aspirational districts and blocks. Government of India, 2025.
7. Kuberan A, Singh AK, Kasav JB, Prasad S, Surapaneni KM, Upadhyay V & Joshi A. Water and sanitation hygiene knowledge, attitude, and practices among household members living in rural settings of India. Journal of Natural Science, Biology and Medicine, 2015, 6 (Suppl. 1), S69–S74. https://doi.org/10.4103/0976-9668. 166090.
8. Dadhich AP, Dadhich PN, & Goyal R. Synthesis of water, sanitation, and hygiene (WaSH) spatial pattern in rural India: An integrated interpretation of WaSH practices. Environmental Science and Pollution Research, 2022, 29 (57); 86873–86886. https://doi.org/10.1007/ s11356-022-21918-z.
9. Mani S, Patnaik S & Lahariya C. Electricity access, sources, and reliability at primary health centres in India and effect on service provision: Evidence from two nation-wide surveys. Indian Journal of Community Medicine, 2021, 46 (1); 51–56. https://doi.org/ 10.4103/ ijcm.IJCM_ 170_20.
10. Shastry V & Rai V. Reduced health services at under-electrified primary healthcare facilities: Evidence from India. PLOS ONE, 2021, 16(6); e0252705. https://doi.org/10.1371/ journal. Pone. 0252705.
11. NITI Aayog. Deep dive: Insights from Champions of Change-The Aspirational Districts Dashboard. Government of India. NITI Aayog – Deep Dive: Champions of Change Dashboard, 2018 June, 27.
12. NITI Aayog. Aspirational Districts Programme: An appraisal. Government of India. NITI Aayog – Aspirational Districts Programme: An Appraisal, 2021.
13. Kapoor A, Green M & Porter ME. An assessment of Aspirational Districts Programme. Institute for Competitiveness & Social Progress Imperative, 2020.
14. Chowdhury S, Gupta I, Prinja S & Trivedi M. Does access to basic amenities influence health status? Evidence from a household survey in three states of India. Journal of Health Management, 2017, 19 (1); 76–94. https://doi.org/10.1177/ 0974930617701519.
15. Agarwal SK & Mishra S. Health impact evaluation of Aspirational Districts Program in India: Evidence from National Family Health Survey. Economics & Human Biology, 54, 101411. https:// doi.org/ 10.1016/j.ehb.2024.101411, 2024.
16. Prime Minister's High-Level Committee. Social, Economic and Educational Status of the Muslim community of India: A report. Cabinet Secretariat, Government of India, 2026.