

Assessment of Infrastructure and Services at Anganwadi Centres under the Integrated Child Development Services (ICDS) scheme in rural areas of district Etawah: A Cross-Sectional Study.

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Abstract

Background: Context: Anganwadi Centres (AWCs) are the main platform for delivering Integrated Child Development Services (ICDS) in India. Infrastructure and service quality at AWCs strongly influence programme effectiveness, and recent studies from different parts of India continue to report gaps in water, sanitation, infrastructure, equipment, and service readiness. **Aim:** To assess the infrastructure and services at AWCs in rural areas of District Etawah. **Settings and Design:** Facility-based cross-sectional study conducted in rural Etawah from January 2024 to November 2025. **Methods and Material:** A total of 120 AWCs from Four rural blocks were selected by systematic random sampling. Data were collected using a pretested structured tool through observation and review of records maintained by Anganwadi workers. **Statistical analysis used:** Descriptive statistics such as frequencies, percentages, mean and standard deviations were used. **Results:** All AWCs were located within villages and 95% had pucca structures, but only 24.2% functioned from dedicated buildings. Child-friendly toilets, safe drinking water through RO purification, and Nutri-gardens were absent in all centres. Electric fans and separate kitchens were available in 34.2% and 18.3% centres, respectively. Supplementary nutrition was provided in all centres, but many essential tools were non-functional, including Infantometer (64.8%) and infant weighing scales (51.7%). Growth monitoring and immunization coverage were good, though health check-up regularity varied. **Conclusion:** Rural AWCs in Etawah had major infrastructure and equipment gaps despite reasonable structural coverage. Functional strengthening, maintenance, and better monitoring are needed to improve ICDS service quality.

Keywords: Anganwadi Centres, ICDS, Infrastructure, Services, Rural health, Etawah.



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INTRODUCTION

Anganwadi Centres (AWCs) serve as the cornerstone for delivering the Integrated Child Development Services (ICDS) scheme in India, targeting early childhood development through six essential services. Despite nearly five decades of implementation and modernization efforts under Mission Saksham Anganwadi and Poshan 2.0, persistent gaps in infrastructure, water, sanitation, hygiene (WASH) facilities, and equipment functionality have been documented across multiple states. Recent studies in Delhi, West Bengal, and Odisha highlight substantial infrastructural deficits, including inadequate child-friendly toilets, safe drinking water, and dedicated buildings.[1,2,3] Furthermore, equipment for growth

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monitoring often remains non-functional, while service coverage does not always translate into quality due to digital reporting burdens and worker motivation issues. [4,8,9]

In Uttar Pradesh, nutritional indicators remain concerning, with District Etawah showing 38.8% stunting among under-five children (NFHS-5).[4]Evidence from rural Etawah on AWC infrastructure and service delivery remains limited. Therefore, the present study was conducted to assess the infrastructure and services at AWCs in rural areas of District Etawah.

SUBJECTS AND METHODS

This facility-based cross-sectional study was conducted in rural areas of District Etawah from January 2024 to February 2026. All eight rural blocks of the district were included. The study population comprised Anganwadi Centres operational during the study period and Anganwadi workers willing to participate.

The sample size was 120 Anganwadi Centres. Centres were selected by two-stage systematic random sampling with representation from all eight rural blocks, as depicted in the participant selection flow diagram (Figure 1). A pretested structured questionnaire and observation checklist were used to collect information on infrastructure, basic amenities, equipment, logistics, and service delivery. Data were collected by direct observation and review of records maintained by Anganwadi workers.

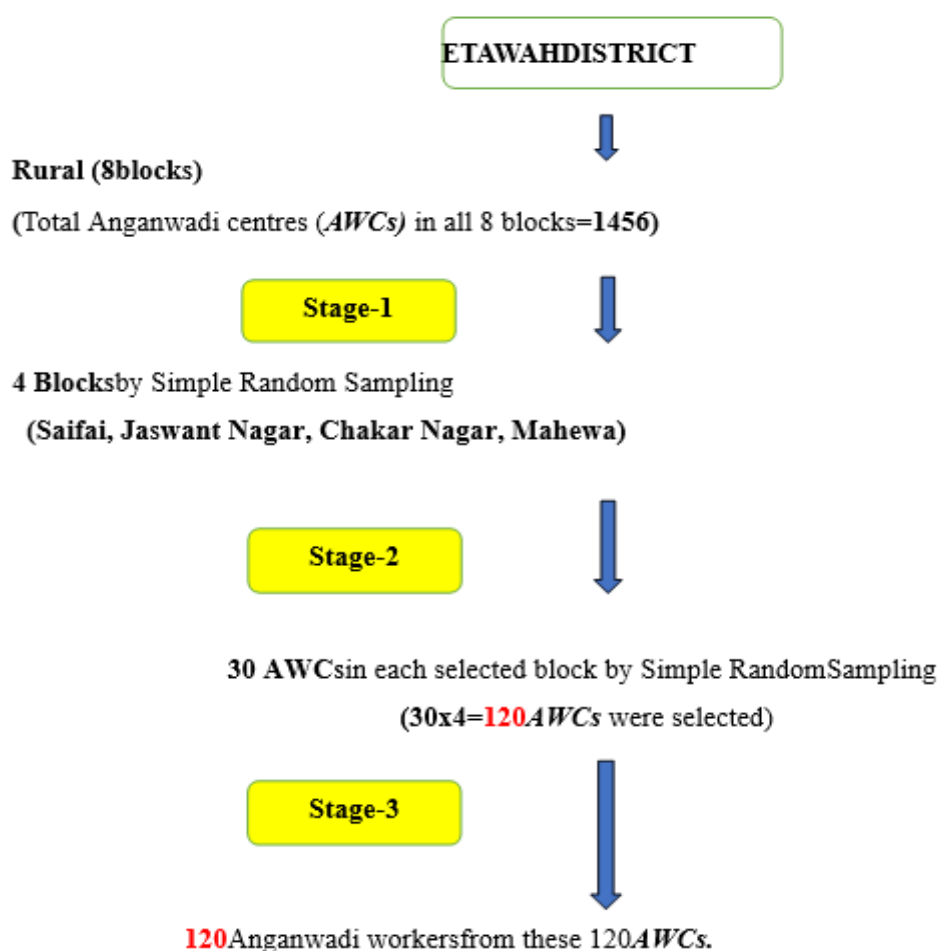


Figure no :1 Flow chart for selection of Participants

RESULTS

Table 1: Socio-demographic profile of Anganwadi workers (n=120)

S.no	Socio-demographic profile	Anganwadi workers (n=120)	
		n	%
1.	Age (Years)		
	Mean $\pm$ SD	44 $\pm$ 5	
	34-44	62	51.7
	45-54	50	41.7
	55-58	8	6.7
2.	Religion		
	Hindu	116	96.7
	Muslim	4	3.3
3.	Category		
	General	18	15.0
	Other Backward caste	69	57.5
	Scheduled Caste	33	27.5
4.	Educational Qualification		
	Secondary school	24	20.0
	Higher Secondary school	60	50.0
	Graduate	34	28.3
	Post-graduate	2	1.7
5.	Marital status		
	Married	117	97.5
	Widow/ Separated	3	2.5
6.	Monthly salary (Rupees)		
	4500-5500	72	60.0
	6000-7500	48	40.0
7.	Residence of AWW		
	Within village	120	100
8.	Anganwadi Helper		
	Yes	108	90.0
	No	12	10.0

Table 1 shows the socio-demographic characteristics of the Anganwadi workers (n=120) with the majority aged 34–44 years (51.7%) and identifying as Hindu (96.7%). Over half belonged to the OBC category (57.5%), and 50.0% had completed higher secondary education. Most were married (97.5%), earned between ₹4,500 and ₹5,500 monthly (60.0%), and all resided within their respective villages (100%).

Table 2: Distribution of Anganwadi centres as per Infrastructure and Condition status

S. No.	Infrastructure	Category	Anganwadi Centres (n = 120), n	%
1	Location	Within village	120	100.0
2	Building Ownership	Own building	29	24.2
		Government school	91	75.8
3	Building Type	Pucca	114	95.0
		Semi-pucca	6	5.0
4	Building Condition	Well-maintained	24	20.0
		Minor repair needed	78	65.0
		Poor condition	18	15.0

Table no: 2 describe the Anganwadi centres which all were located within villages, with the majority (75.8%) operating from government schools and only 24.2% having dedicated buildings. While most featured pucca structures (95.0%), maintenance was largely suboptimal, with 65.0% requiring minor repairs and 15.0% found in poor condition.

Table 3: Distribution of Anganwadi centres as per availability and functionality status of basic Amenities

S.no	Basic Amenity	Anganwadi centres (n=120)	Functionality Status	n	%
1.	Electric fan	41	Functional	35	85.3
			Non-functional	6	14.7
2.	Lighting	86	Functional	70	81.3
			Non-functional	16	18.6
3.	Separate kitchen	22	Hygienic	19	86.3
			Unhygienic	3	13.6
4.	Store room (food)	13	Pest-free	9	69.2
			Infested	4	30.7
5.	Store room (equipment)	29	Functional	23	79.3
			Non-functional	6	20.6
6.	Indoor activity space	105	Adequate	42	40.0
			Inadequate	63	60.0
7.	Outdoor activity space	101	Adequate	89	88.1
			Inadequate	12	11.8

Table 3 describes the basic amenities were limited, with electric fans present in 41 centres (85.3% functional) and lighting in 86 (81.3% functional). Separate kitchens were available in 22 centres (86.3% hygienic), while food and equipment storage facilities showed functional and hygiene gaps. Although indoor activity space was common, it was adequate in only 40.0% of cases, whereas outdoor space was adequate in 88.1% of centres.

Table 4: Distribution of Anganwadi centres as per availability and functionality status of anthropometric equipment and preschool education kits

S.no	Equipment	Anganwadi centres (n=120)	Functionality Status	n	%
1.	Infantometer	37	Functional	13	35.1
			Non-functional	24	64.8
2.	Stadiometer	65	Functional	36	55.3
			Non-functional	29	46.0
3.	Infant weighing scale	56	Functional	27	48.2
			Non-functional	29	51.7
4.	Mother & child scale	113	Functional	99	87.6
			Non-functional	14	12.3
5.	Growth charts	115	Preserved/readable	32	27.8
			Faded/illegible	83	72.1
6.	NFPSE kits*	116	Well-maintained	45	38.7
			Worn-out/incomplete	71	61.2

***Non-Formal Pre-school Education**

Table 4 presents the functionality status of anthropometric equipment was notably low, with only 35.1% of Infantometer, 55.3% of Stadiometers, and 48.2% of infant weighing scales being functional. Mother and child scales performed better at 87.6% functionality, but 72.1% of growth charts were faded or illegible. Additionally, while NFPSE kits were widely available, 61.2% were worn-out or incomplete.

Table 5: Distribution of Anganwadi centres as per Service delivery status of ICDS components

S.no	Service Components	Anganwadi centres (n=120)	%
1.	Supplementary Nutrition		
	THR* provided	120	100.0
	HCM* provided	118	98.3
	Regular supply (≥ 25 days/month)	87	72.5
2.		Meal plan displayed	79.2
	Growth Monitoring		
	Regular weighing conducted	120	100.0
3.		Monthly frequency	63.3
	Health Check-ups		
	For children	102	85.0
	ANC* for pregnant women	94	78.3
4.		PNC* for lactating mothers	74.2
	Immunization Facilitation		
	Immunization services	120	100.0
5.		Regular VHND (monthly)	90.0
	Preschool Education (PSE)		
	PSE activities conducted	114	95.0
	Daily sessions (of 114)	68	59.6
6.		Play-way methods used (of 114)	71.9
	Health & Nutrition Education		
	Regular sessions conducted	106	88.3

*THR-Take Home Ration, HCM-Hot Cooked Meals, ANC-Antenatal care, PNC-Postnatal care

Table 5 summarises ICDS service coverage was broadly high, with 100% coverage for supplementary nutrition (THR), regular weighing, and immunization support. However, gaps in regularity were evident: only 72.5% of centres maintained a consistent 25-day food supply, and monthly weighing was achieved in just 63.3% of cases. While preschool education and health education reached over 88% of centres, daily preschool sessions occurred in only 59.6% of those facilities.

DISCUSSION

The present study reveals a significant gap between the broad geographic reach of the ICDS scheme and the functional quality of infrastructure in rural Etawah. While 95% of AWCs operated from pucca structures, only 24.2% had dedicated buildings. These findings correlate with Pradhan et al. (2025) [2], who reported similar infrastructural deficits in West Bengal, noting a heavy reliance on government school premises rather than independent facilities. The absolute absence of child-friendly toilets and safe RO drinking water in the 120 studied centres is a critical deficiency. This aligns with Behera et al. (2025) [3] and Tabassum et al. (2025) [1] who both documented significant gaps in WASH practices and physical infrastructure in Odisha and Delhi respectively.

Growth monitoring services showed a disconnect between universal coverage and tool functionality. Although weighing was conducted in all centres, 64.8% of Infantometer and 51.7% of infant scales were non-functional. This lack of equipment readiness is consistent with findings by Vishwa Prasad et al. (2024)[6] in Karnataka. Furthermore, the high prevalence of illegible growth charts(72.1%) reflects the documentation challenges and digital transition issues highlighted by Kurian et al.(2023)[10] and Verma and Mishra (2025)[4].

While supplementary nutrition showed near-universal coverage (100% for THR), regular supply for at least 25 days a month was achieved in only 72.5% of centres. The 59.6% rate of daily preschool education (PSE) sessions suggests better performance than some older multi-state evaluations like Panda et al. (2021)[14], yet it indicates that worker motivation and reporting burdens, as discussed by Pandey et al. (2024)[9], continue to impact service intensity.

CONCLUSION

Rural Anganwadi Centres in District Etawah showed major infrastructure and functional gaps despite broad geographic coverage and predominantly pucca buildings. Critical deficiencies included absence of child-friendly toilets and safe drinking water, limited kitchen and storage facilities, and poor functionality of essential growth-monitoring equipment. Strengthening dedicated infrastructure, maintenance protocols, supportive digital systems, and routine monitoring is necessary to improve the quality and effectiveness of ICDS services in rural Etawah.

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Conflicts of Interest

There are no conflicts of interest.

Authors' Contribution

All authors contributed to the conception, design, data collection, analysis, interpretation, drafting, and revision of the manuscript, and approved the final version.

Ethical Policy and Institutional Review Board Statement

Ethical clearance was obtained from the Institutional Ethics Committee before initiation of the study.

Patient Declaration of Consent Statement

Written informed consent was obtained from all participating Anganwadi workers. No patient-identifiable information is included in this manuscript.

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