

Impact of Infrastructure Limitations on Quality ECCE in Anganwadi Centers of Rangia Subdivision of Kamrup District, Assam: A Study in the Context of NEP 2020 and NCF-FS 2022

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Abstract: *Early Childhood Care and Education (ECCE) is pivotal for the cognitive, physical, and socio-emotional development of young children. In India, the National Education Policy (NEP 2020), along with the National Curriculum Framework for Foundational Stage (NCF-FS 2022), emphasizes the importance of providing quality ECCE through Anganwadi centres. This study examines the impact of infrastructure limitations on the provision of quality ECCE services in Anganwadi centres in Rangia Subdivision, Assam. Focusing on challenges such as inadequate buildings, lack of sanitation, insufficient water supply, and the absence of electricity, the research highlights how these deficiencies undermine the effectiveness of ECCE programs. The study employed a descriptive survey method, utilizing both structured questionnaires and semi-structured interviews to gather data. Data collected from 85 randomly selected Anganwadi centres reveal that infrastructure inadequacies significantly affect the quality of education, health services, and overall child development outcomes. The findings underscore the urgent need for targeted infrastructural improvements to ensure that every child in this region has access to quality ECCE, as envisioned by NEP 2020 and NCF-FS 2022.*

Keywords: Anganwadi Centres, Childhood Education, ECCE, NEP 2020, NCF-FS 2022

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1. Introduction

Early Childhood Care and Education (ECCE) plays a pivotal role in shaping a child's cognitive, socio-emotional, and physical development. The National Education Policy (NEP) 2020 of India recognizes this critical phase, emphasizing that over 85% of brain development occurs during these formative years (NCF 2020). As such, the policy advocates for universal access to high-quality ECCE for children aged 3-6 years, viewing it as essential for establishing a strong foundation for lifelong learning and well-being.

In India, Anganwadi centres, established under the Integrated Child Development Services (ICDS), serve as the primary institutions for delivering ECCE services, particularly to children from socio-economically disadvantaged backgrounds. These centres provide a range of essential services, including pre-school education, nutrition, and health monitoring. Recognizing their significance, the NEP 2020 outlines ambitious plans to enhance Anganwadi centres, advocating for improved infrastructure, trained educators, and better resources to ensure effective ECCE delivery.

However, the implementation of these policy objectives faces significant challenges, especially in rural areas. The National Curriculum Framework for Foundational Stage (NCF-FS 2022) highlights that "Anganwadis are currently quite deficient in supplies and infrastructure for education" and "have few teachers trained in or dedicated specifically to early childhood education" (NCF-FS, 2022). This gap between policy ambition and ground reality is particularly evident in regions like the Rangia subdivision Kamrup district of Assam.

This paper investigates the specific infrastructural challenges faced by Anganwadi centres in the Rangia subdivision and examines how these limitations affect the provision of quality ECCE. Through a systematic analysis, the study aims to uncover the barriers that impede effective early childhood education in rural Assam. By focusing on various aspects such as Issues such as inadequate sanitation, lack of electricity, insufficient space for activities, and unreliable access to clean drinking water hinder the ability of these centres to provide quality care and education.

2. Review Related Literature

Thangaraj S. et al. (2019) found that 85% of rural and 60% of urban Anganwadi centres in Bangalore had their own buildings for service delivery. However, 55% of rural centres and 90% of urban centres lacked separate storage facilities for raw food materials. Additionally, 15% of rural centres did not have functional toilet facilities. Joshi K. (2018) conducted a cross-sectional analysis through interviews with Anganwadi workers (AWWs) to identify key challenges faced by them. The study revealed that 55% of AWWs reported infrastructure-related issues and inadequate supply of play materials. Additionally, 24% identified problems with water, electricity, and drainage systems. Gill et al. (2017) conducted a study in Amritsar, Punjab, involving 400 Anganwadi workers (AWWs). The study found that only 24% of the Anganwadis surveyed had their own allotted buildings, indicating that many operated in temporary or shared spaces. Additionally, 50.8% of the Anganwadis lacked access to electricity, which could affect their ability to provide services, especially in low-light conditions. Only 53% had a reliable water supply, which is crucial for hygiene and providing clean drinking water. Sabat et al. (2020) conducted a cross-sectional study in Ganjam district, Odisha, to assess the infrastructure and logistics at Anganwadi centres (AWCs) in the Chatrapur block. It found that 75% of AWCs operated from their own buildings. Only 66.6% had sufficient indoor space, and 41.7% had storage facilities. Over half (54.2%) were deemed hygienic.

3. Objective

To assess the impact of infrastructure limitations on the quality of ECCE in Anganwadi centres of Rangia Subdivision, Kamrup district, Assam, in the context of NEP 2020 and NCF-FS 2022.

4. Methodology

The research methodology employed in this paper, entitled "Impact of Infrastructure Limitations on quality ECCE in Anganwadi Centres of Rangia Subdivision of Kamrup district, Assam: A Study in the context of NEP 2020 and NCF-FS 2022" Centres on a descriptive research approach to unravel the intricate issues within this educational landscape.

4.1. Population

There are totally 410 Anganwadi Centres in Rangia sub division under Rangia-Kamalpur ICDS project which is considered as population for the study.

4.2. Sample and Sampling Technique

In this paper, the sample under scrutiny consists of a meticulously selected subset of Anganwadi Centres within the Rangia Sub Division. The study employs a robust and methodologically sound approach known as simple random sampling to ensure a representative and unbiased representation of these vital Centres. This strategic sampling technique allows us to extrapolate meaningful insights into the challenges encountered during the implementation of Early Childhood Care and Education (ECCE) under the National Education Policy (NEP) 2020 and NCF-FS. For this present study total 85 samples (Anganwadi centres) were chosen out of 410 Anganwadi Centres.

4.3. Tool Used

In the pursuit of understanding the "Impact of Infrastructure Limitations on quality ECCE in Anganwadi Centres of Rangia Subdivision of Kamrup district, Assam: A Study in the context of NEP 2020 and NCF-FS 2022." this study employed a self-made structured close ended questionnaires designed to gather specific information of Anganwadis

5. Result

The following section presents the key findings of the study, in tabular form.

Sl	Type of the Anganwadi centre building	Number of Anganwadi	Parentage (%)
1	Concrete Building	73	85.9%
2	Half concrete wall and bamboo tarja	3	3.5%
3	Kutch building	9	10.6%
	Total	85	100%

Table 1: Type of the Anganwadi centre building

Sl	Toilet facility	No of Anganwadi	Percentage (%)
1	Yes	15	17.6%
2	No	70	82.4%
	Total	85	100%

Table 2: Toilet facility

Sl	Source of drinking water in your AWC	No of Anganwadi	Percentage (%)
1	Ground water (Well/Tubel)	19	22.3%
2	Public water supply	14	16.5%
3	No source of drinking water	52	61.2%
	Total	85	100%

Table 3: Source of drinking water

Sl.	Availability of clean potable drinking water facility with water filters	No of Anganwadi	Percentage (%)
1	Yes	40	47.1%
2	No	45	52.9%
	Total	85	100%

Table 4: Availability of clean potable drinking water facility with water filters

Sl	Working electricity connection at Anganwadi centres	No of Anganwadi	Percentage (%)
1	Yes	16	18.8%
2	No	69	81.2%
	Total	85	100%

Table 5: Working electricity connection

Sl	Space for indoor activity	No of Anganwadi	Percentage (%)
1	Sufficient	28	32.9%
2	Insufficient	57	67.1%
	Total	85	100%

Table 6: Sufficient space for indoor activity

6. Analysis of the Result

The data of Table 1 shows that the majority of Anganwadi centres (85.9%) are housed in concrete buildings, which indicates strong infrastructure and stability for most centres. However, a small percentage (3.5%) of centres operate in buildings made of half concrete walls and bamboo tarja, and 10.6% of the centres are in kutchha buildings, which are structurally weaker. These non-concrete structures could pose safety risks for children and staff, highlighting the need for infrastructure upgrades in a small but significant portion of centres.

Table 2 showed that, toilet facilities are notably lacking in most Anganwadi centres, with 82.4% of the centres reporting no toilet availability. Only 17.6% of the centres have functional toilets. This severe shortage of sanitation facilities raises concerns about hygiene and the overall health environment for children and staff at these centres. Improving access to toilets should be a key priority to ensure the basic health standards are met.

Table 3 and 4 depicted that, access to drinking water is another area of concern, with 61.2% of Anganwadi centres reporting no source of drinking water. Of the remaining centres, 22.3% rely on ground water, while 16.5% are connected to public water supplies. Additionally, only 47.1% of centres have access to clean potable water with filters, while 52.9% lack filtered water facilities. This gap in water access and filtration could lead to health issues, emphasizing the need for improved water infrastructure across centres.

Table 5 showed that, electricity is available in only 18.8% of Anganwadi centres, leaving a vast majority (81.2%) without a working electricity connection. This lack of electricity hinders the ability of centres to provide well-lit, safe, and comfortable environments, especially during the evening or cloudy conditions. The

absence of electricity also limits the potential use of electrical equipment and educational tools, further constraining the centres' learning environment.

Finally, table 6 showed that when it comes to indoor activity space, 67.1% of Anganwadi centres report insufficient space for conducting indoor activities, which restricts the scope of interactive and developmental activities of ECCE for children. Only 32.9% of the centres have adequate space for such activities, which is crucial for fostering a nurturing and engaging learning environment. Addressing this space shortage could enhance the quality of care and education provided to children.

7. Discussion

The results of this study highlight significant infrastructural deficiencies in the Anganwadi centres of Rangia Subdivision, particularly concerning basic sanitation, drinking water and electricity. A considerable majority (82.4%) of the centres lack toilet facilities, indicating critical gaps in hygiene and sanitation, which are essential for maintaining a safe and conducive learning environment for young children. These findings diverge from the studies conducted by Thangaraj S. et al. (2019), Paul B. et al. (2017), and Thakur et al. (2015), all of which reported better access to toilet facilities in their respective study areas. The stark contrast underscores an urgent need to address these inadequacies, as the absence of proper sanitation facilities poses severe health risks and undermines the quality of care provided to children.

A substantial 47.1% of Centres lack access to clean and safe drinking water facilities. Only 52.9% of Centres have provisions for clean and safe drinking water, underscoring the need for improved infrastructure. This finding is also inconsistent with findings of Thakur et al. (2015) and Gill et al. (2017), as they found better drinking water facilities in their respective study area. Which shows urgent attention is needed in this matter.

In addition, the study reveals that 81.2% of Anganwadi centres in Rangia Subdivision lack a working electricity connection, leaving only 18.8% of the centres with access to electricity. This severely limits the use of electronic tools and resources that can significantly enhance early childhood education. These findings are consistent with those of Gill et al. (2017), who found that many centres lacked electricity in their study. However, the condition in the Rangia Subdivision is notably worse, indicating a more pressing need for infrastructural improvements in this region.

The absence of electricity affects not only the learning environment but also basic operational aspects, such as proper lighting and ventilation, further impacting the quality of Early Childhood Care and Education (ECCE) services. Given the NEP 2020 and NCF-FS 2022 goals, these findings highlight a clear gap between policy aspirations and the on-ground realities of ECCE implementation in rural Assam.

8. Conclusion

The study reveals significant infrastructure deficiencies in Anganwadi centres within the Rangia Subdivision of Kamrup district, which adversely affect the quality of Early Childhood Care and Education (ECCE) services. The findings indicate that while a majority of the centres have concrete buildings, a notable portion operates in inadequate structures. The lack of essential amenities such as toilets, clean drinking water, and electricity further impedes the ability of these centres to provide a safe and conducive learning environment. Additionally, a large percentage of centres face space constraints, limiting indoor activities crucial for child development.

These infrastructural challenges undermine the goals set forth by the National Education Policy (NEP) 2020 and the National Curriculum Framework for Foundational Stage (NCF-FS) 2022, which aim to ensure high-quality ECCE. To bridge this gap between policy and reality, urgent efforts must be made to improve the physical conditions of Anganwadi centres. Investments in sanitation, water supply, electricity, and adequate space for activities are critical to enhancing the overall learning environment, ensuring the well-being of children, and supporting their cognitive, physical, and socio-emotional development.

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AUTHOR CONTRIBUTIONS:

Kumar Samarjeet Mahanta is responsible for conceptualizing the study and developing the research design. He oversaw the data collection process and provided critical inputs during the analysis of results. Mahanta also contributed significantly to the interpretation of the data and writing the first draft of the manuscript.

Nitumoni Saikia contributed to the literature review, assisted in data collection and helped refine the methodology. She participated in structuring the questionnaire and contributed to editing the manuscript. Saikia also played a key role in ensuring accuracy in data entry and analysis. Both authors read and approved the final version of the manuscript contributed equally and deserved to be authorship.