Beyond Attitude: A Health-Systems Access Comparison of Exclusive Breastfeeding Practices in Northern and Southern Nigeria

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Abstract
Exclusive breastfeeding (EBF) is one of the most cost-effective child survival interventions possible but the national average rate of EBF in Nigeria has been stagnating at around 29% for well over a decade now. Most of the studies carried out on Nigerian EBF mostly use individual/household factors, mother's education, income, antenatal visit mostly from the Behavioral Model of Andersen to explain subnational variation in EBF rates in Nigeria. The comparison of North-South at health system/supply side factors is uncommon despite the obvious regional variations in primary healthcare provision and distribution of health workers in Nigeria. To compare Northern and Southern Nigeria in the five dimensions of Penchansky and Thomas's theory of access, that is, availability, accessibility, affordability, accommodation and acceptability and to what extent these supply-side factors relate to North-South disparities in the prevalence of EBF. It is a full desk-based, cross-sectional and trends comparison of secondary data (MICS 2021; NDHS 2023-24 and Mini-DHS 2025-26 Key Indicator Reports; State of Health of the Nation Report 2024; National Health Accounts of 2017 and peer-reviewed facility-based and population-based studies). A population-weighted zonal composite has been developed to make North-South comparison. No micro data linkage and regression modeling since there is no NDHS/National Health Facility Survey data; findings are pure structured narrative synthesis. Access indicators have traditionally been lower for Northern Nigeria compared to Southern Nigeria: skilled

attendance at birth (16.6%-23.1% North West/ North East compared to 83.6%-84.6% South West/South East); facility delivery (16.4% North West compared to 80.8% South East); health workforce distribution (62% of medical practitioners in the South compared to 28% in the North); PHC quality-of-care scores. However, EBF does not exhibit a North lagging behind the South trend in a clear fashion: according to 2021 MICS zonal EBF prevalence figures, South West (52.6%) had the highest rate, South East (20.3%) and South South (22.2%) had the lowest rate, whereas all three Northern zones had an intermediate rate (29.6%-38.5%). According to the weighted average of the three zonal regions, North had ≈33.1%, while South had ≈34.5%, making the difference smaller compared to the other access indicators. The access indicators of the health care system are capable of explaining a great deal about the North-South difference in obstetric statistics, yet EBF cannot be explained in such a way and depends on Accommodation and Acceptability factors rather than the mere Availability/Acessibility approach. Facilities will have to be increased in the North West and North East regions; however, this is insufficient to address the EBF problem without focusing on the region-specific breast-feeding competencies and the community's trust in them in the South East and South South regions.

Keywords: *exclusive breastfeeding; health systems access; Nigeria; Penchansky and Thomas; North-South disparity; primary health care*

1. Introduction

Babies being breastfed within an hour after birth, and subsequently fed exclusively on breast milk (EMF) for six months are some of the best and cheapest ways of minimizing infant morbidity and mortality rates (World Health Organization [WHO], 2021). It is recommended by the World Health Organization and UNICEF that babies should be fed exclusively on breast milk for the first six months of their lives without water, formula, and any other liquid or solid (WHO, 2021). Despite this recommendation being the Nigerian government policy for many years now, adoption rates have remained low. From data trends reported in the Nigeria Demographic and Health Survey (NDHS) 2023-24 Key Indicators Report, national EMF prevalence increased from 2% in 1990 to 17% in 2003, decreased to 13% in 2008, increased to 17% in 2013, increased further to 29% in 2018 NDHS and remained relatively stagnant at 28.8% in 2023-24 NDHS (National Population Commission [NPC] & ICF, 2024). From the most recent Mini-DHS 2025-26 Key Indicators Report, the number has increased to 34.2% (NPC & ICF, 2026), although a modest increase, it remains significantly below the 70% global target. The overall national picture, however, fails to capture the arguably much more important story of how large the gap is. In 2021, the Multiple Indicator Cluster Survey (MICS) indicated that the prevalence of EBF was 20.3% in the South East but rose up to 52.6% in the South West, meaning there was a difference of 32.3 percentage points among only six geopolitical zones; other zones include North Central (38.5%), North East (34.0%), North West (29.6%), and South South (22.2%) (National Bureau of Statistics [NBS] & United Nations Children's Fund [UNICEF], 2022). It is worth noting that this gap exceeds the difference in the trend recorded within thirty years at the national level. The phenomenon repeats itself, albeit in different forms, in practically every MCH indicator in Nigeria. For instance, facility-based delivery varied from 16.4% in the North West to 80.8% in the South East, skilled birth attendance varied from 16.6% in the North West to 84.6% in the South West (Abdulraheem et al., 2025); and under-five mortality rate varied from 140 per 1,000 live births in the North West to 42 per 1,000 in the South West (Anche et al., 2025). North-South divide in MCH outcomes in Nigeria is probably the most pressing problem of health equity in Africa. A vast body of literature on Nigerian EBF practice exists, but there is an imbalance in it. By far the most commonly used approach to studying the topic is to run

single-facility or LGA-specific cross-sectional studies of EBF prevalence modelling it as a function of individual/household characteristics such as maternal age, education, occupation, parity, ANC attendance, delivery type and spousal/"significant other" support (Ekholuenetale et al., 2022; Elegbua et al., 2023; Ibekwe et al., 2022; Jeremiah et al., 2026; Ogbondah, 2022; Udeh et al., 2025; Ukweh et al., 2020; Uzoma et al., 2025). Most of these studies, many of which concentrate on the South West and South South (Ekiti, Osun, Oyo, Rivers) regions of the country, adopt the supply-side focus, closely resembling Andersen's Behavioural Model of Health Services Use and relying primarily on predisposing, enabling and need characteristics of the individual. In 2021, a systematic review of qualitative barriers and facilitators to EBF in sub-Saharan Africa was organised along the same lines, focusing on maternal-infant, interpersonal and socio-cultural factors as opposed to any health system supply factors (Ejie et al., 2021). A more recent integrative review of Nigerian EBF literature (19 primary studies, 2013-2024) revealed a pooled EBF rate of 46.4% (12.5-73.8%), while maternal age, tertiary education and hospital delivery were the facilitating factors, and cultural myths of colostrum being "dirty" and breastmilk being inherently "insufficient" without water, the major barriers. It is worth noting that what has not been adequately examined, in this literature, is the relationship between the supply-side variables related to the health systems and the North-South gap in EBF. In other words, there have been no empirical tests carried out to see whether or not it is possible to explain the difference in EBF in terms of the health facilities available to the people in the different parts of the country, rather than demand-side issues alone. It is indeed surprising that this particular question remains unanswered, given the fact that the health system of Nigeria itself displays significant inequity between the North and the South. For instance, the Federal Ministry of Health and Social Welfare's State of Health of the Nation Report 2024 shows that more than 80% of health workers are located in urban areas, that the South has 62% of the medical professionals of the whole nation, while the Northern part has 28% (and 10% in the Federal Capital Territory). Furthermore, 73-77% of medical and dental schools are located in the Southern part, while 61-62% of nursing, midwifery and dental-therapy schools are located in the Northern part (Federal Ministry of Health and Social Welfare [FMoHSW], 2024). Similarly, the National Health Accounts 2017 report states that "the health system exhibits deficits of facilities, human resources, equipment and commodities; and inequities in the distribution of existing infrastructure and resources ... across regions (north versus south)" (Federal Ministry of Health [FMoH], 2019). Given the above-mentioned information, one could hypothesize that EBF support would follow the North-South gradient of facilities as closely as other health outcomes do (Abdulraheem et al., 2025; Olubodun et al., 2024).

This paper fills that gap. Utilising Penchansky and Thomas's Theory of Access, "the Five A's": Availability, Accessibility, Affordability, Accommodation and Acceptability, as the organizing theoretical framework, this paper poses three questions. First, does Northern and Southern Nigeria have significant access differences across all five access dimensions in relation to breastfeeding support? Second, is there a correspondence between the pattern of the access dimension differences and the pattern of the EBF gap itself, or is there some disjunction in EBF which needs another explanation? Finally, to the extent possible, in view of the lack of time-series trend data, has the access-difference component of the North-South EBF gap widened or narrowed along with Nigeria's modest national EBF gains from 2018 to 2025-26? It should be noted that the analysis that follows is explicitly a desk-based descriptive comparative synthesis. NDHS and NHFS micro-level data allowing identification of each mother by the facility and zone she uses were unavailable for this paper, only survey reports, facility readiness manuals and secondary analyses were at hand. The contribution made here is thus not a new regression coefficient but a systematic, theory-based reading of the published data, one that, as it will be shown below, leads to a truly counter-intuitive

conclusion: the North-South disparity in health systems access is real, substantial and consistent across almost all the indicators, while the North-South gap in EBF itself is smaller and more complicated than it would have been expected under a health systems access explanation alone.

2. Theoretical Framework

The present study will employ the Theory of Access (known as "Five A's") as the organizing theory in place of the more general WHO Health Systems Building Blocks approach. Though comprehensive, the Building Blocks approach (which has six building blocks of health systems: service delivery, health workforce, health information, medical products and technologies, financing, and health system leadership/governance) was meant to be used in diagnosing the entire system, and its building blocks cannot easily match the client-oriented and facility-level data available for Nigeria. The Five A's, on the other hand, were specifically developed to diagnose the fit between need and supply, and its five dimensions match reasonably well the available indicators for Nigeria.

Table 1: Access dimensions, working definitions and Nigerian data proxies used in this study

Dimension	Working definition	Nigerian data proxy used here
Availability	Supply of facilities/services relative to need	Number and functional level of primary health centres (PHCs), PHC/Level-2 facility density per 10,000 km² (FMoHSW, 2024)
Accessibility	Geographic/physical and workforce reach of services	Health workforce density and North-South distribution, skilled birth attendance rate (Abdulraheem et al., 2025; FMoHSW, 2024; Onyeabor et al., 2026)
Affordability	Financial burden of accessing care	Out-of-pocket (OOP) share of current health expenditure, health insurance coverage, Basic Health Care Provision Fund (BHCPF) effect (Ezenduka et al., 2025; FMoH, 2019)
Accommodation	How services are organised to meet client needs	Facility service-readiness/quality-of-care scores, staff breastfeeding-specific knowledge and support practices (Alao et al., 2024; Olufayo et al., 2025; Oluwatola et al., 2025; Oluwole et al., 2022)
Acceptability	Client comfort with, and trust in, available services	Facility delivery uptake relative to availability (proxy only), gender norms and decision-making autonomy, cultural myths around colostrum/water supplementation (Adekeye, 2025; Oputa-Uzoukwu & Joseph, 2026)

Acceptability does not have any quantifiable nationally representative data sources for Nigeria, which has been stated right from the beginning of the research framework for this paper. However, the other four factors all have reasonable secondary proxies that can be used for the same purpose and not arbitrarily picked as it is the case in most comparative health studies done in Nigeria.

2.1 Hypotheses

Following the framework above, three hypotheses guided the synthesis:

H1: Northern zones show lower composite scores than Southern zones on Availability, Accessibility and Accommodation.

H2: Facility-level Accommodation (service readiness and staffing) is at least as strongly associated with zonal EBF variation as Affordability.

H3: The access-related component of the North-South gap has not narrowed proportionally to the modest national EBF increase observed between 2018 and 2025–26.

3. Methods

3.1 Design

This is a secondary data analysis of a desk-based and trend comparative nature across two macro-regions: North (North Central, North East, North West) and South (South East, South South, South West). This study does not employ any primary data and does not engage in any new individual-level statistical modeling. The rationale behind such an approach is the availability of data rather than its preference: true multilevel analysis with nested individual EBF status at the higher levels of facility- and zone-level access score requires linking NDHS and NHFS micro-data sets, which can be accessed through the DHS Program and Nigeria's National Bureau of Statistics through a different application procedure. Instead of that, a structured narrative synthesis is offered: zonal and national level statistics from survey reports and peer-reviewed papers using the Five-A's framework.

3.2 Data sources

Outcome data (EBF prevalence, breastfeeding status, trend) were drawn from three nationally representative household surveys: the 2021 Nigeria MICS and National Immunization Coverage Survey (NBS & UNICEF, 2022), the NDHS 2023–24 Key Indicators Report (NPC & ICF, 2024), and the Mini-DHS 2025–26 Key Indicators Report (NPC & ICF, 2026). EBF is defined consistently across these surveys, following the standard DHS/MICS indicator, as the percentage of the youngest children aged 0–5 months living with their mother who were fed exclusively with breastmilk (no other liquids or solids, with the standard exception of prescribed medicines/oral rehydration solution) during the 24 hours preceding the interview (NBS & UNICEF, 2022; NPC & ICF, 2024). Access-dimension proxy data were drawn from: the Federal Ministry of Health and Social Welfare's State of Health of the Nation Report 2024, for facility density, functionality and workforce distribution (FMoHSW, 2024); the 2017 National Health Accounts, for out-of-pocket and government health-financing shares (FMoH, 2019); and peer-reviewed, facility- or population-based studies for skilled birth attendance, institutional delivery, PHC quality-of-care scores, and health-worker breastfeeding knowledge (Abdulraheem et al., 2025; Alao et al., 2024; Anche et al., 2025; Olubodun et al., 2024; Olufayo et al., 2025; Oluwatola et al., 2025; Oluwole et al., 2022; Onyeabor et al., 2026). Individual-level EBF determinant studies conducted within specific states or facilities were used to illustrate mechanisms and corroborate patterns, not to generate new pooled estimates (Amat Camacho et al., 2023; Ekholuenetale et al., 2022; Elegbua et al., 2023; Ibekwe et al., 2022; Jeremiah et al., 2026; Ogbondah, 2022; Udeh et al., 2025; Ukweh et al., 2020; Uzoma et al., 2025).

3.3 Zone classification and the North-South composite

The six geopolitical zones in Nigeria (North Central, North East, North West, South East, South South, and South West) were aggregated into the North and South macro-regions, reflecting both the research protocol design and the convention in the Nigerian health systems literature (FMoH, 2019; FMoHSW, 2024). Since MICS 2021 does not provide figures on

EBF prevalence by North and South macro-regions but only by zones (NBS & UNICEF, 2022), a weighted average for North and South was calculated for this paper based on the shares of the zonal populations of women aged 15-49 in NDHS 2023-24 (North Central 18.1%, North East 15.9%, North West 31.8%; South East 8.4%, South South 11.3%, South West 14.4%) (NPC & ICF, 2024). The population shares weighting scheme is an approximation and applies 2023-24 population shares to the 2021 prevalence rate, but the computation of the number is presented transparently and is reproducible.

3.4 Analytical approach

For each of the five dimensions, existing zone-level or state-level access indicators were compiled and described by comparison between North and South, and, if data permitted, between individual zones. The prevalence of EBF and its trend were then examined in relation to this access pattern, in order to determine the extent of correspondence, which is the fundamental empirical question posed in this paper. There is no attempt at a statistical measure of the relationship (correlation, regression) between zonal access and EBF measures, as these zonal access and EBF variables stem from different survey periods and use different sampling frames and units of analysis (facility-level versus population-level) and six data points do not justify statistical inference.

3.5 Limitations of the approach

There are three major limitations in this approach, elaborated upon in Section 6, which include inability to identify the "why" of observed patterns especially with respect to Acceptability; lack of linkage of NHFS facility level data and NDHS/MICS individual level data at individual level resulting in an ecological/contextual comparison as opposed to a multilevel one; and finally, the Key Indicator Reports of the two latest DHS rounds (2023-24 and 2025-26), while reporting national prevalence of EBF, fail to provide zonal breakdown for EBF, hence, the EBF situation by zone is based on the latest zonal round of MICS 2021 only.

4. Results

4.1 The EBF outcome: a pattern that is not simply North-lags-South

Table 2 presents MICS 2021 EBF prevalence by geopolitical zone, alongside the population-weighted macro-regional composite described in Section 3.3.

Table 2: Exclusive breastfeeding prevalence (children aged 0–5 months) by geopolitical zone, Nigeria MICS 2021 (NBS & UNICEF, 2022)

Zone	Region	EBF (%)
South West	South	52.6
North Central	North	38.5
North East	North	34.0
North West	North	29.6
South South	South	22.2
South East	South	20.3
National		**34.4**
North (population-weighted)		**≈33.1**
South (population-weighted)		**≈34.5**

Two things stand out. First, the raw range across zones is enormous, a 32.3 percentage-point spread between the South West (52.6%) and the South East (20.3%), and it is not a North-South split at all: it is a South West outlier at one end and two other Southern zones (South East, South South) anchoring the other end, with all three Northern zones occupying the middle of the distribution. Second, once zonal prevalence is weighted by population share, the North (≈33.1%) and South (≈34.5%) composites are nearly identical, with the South only marginally ahead, a gap of roughly 1.4 percentage points, an order of magnitude smaller than the gaps reported for facility delivery, skilled birth attendance, or under-five mortality (see below). This is the central empirical finding of this paper, and it complicates any simple narrative in which Southern health-system advantage should translate one-for-one into a Southern EBF advantage. The national trend confirms that Nigeria's EBF gains have been slow and, on the most recent evidence, still fall short of a sustained breakthrough: from 29% in the 2018 NDHS to 28.8% in the 2023–24 NDHS, essentially flat, before rising to 34.2% in the 2025–26 Mini-DHS (NPC & ICF, 2024, 2026). Because the two most recent Key Indicators Reports do not report EBF by zone, this paper cannot establish whether the 2023–24-to-2025–26 national increase was distributed evenly across zones or concentrated in particular regions; this is flagged as an evidence gap in Section 6 rather than resolved with speculation.

4.2 Availability

According to Nigeria's Federal Ministry of Health, of the 8,421 primary health care facilities evaluated in the country during 2024, only 21% of them were deemed functional enough to be classified as a full function Level 2 (L2) facility, which can provide 24 hours delivery services with sufficient staff and power, while 65% were classified as functional enough to meet Level 1 (L1) criteria (FMoHSW, 2024). In absolute numbers, the North East Zone was the one with the largest number of functional L2 facilities; however, as a density measure, the North East Zone has the lowest density of facilities among all zones because of its large territory size and small population. On the contrary, the South East Zone has the smallest proportion of functional L2 facilities compared to other zones, while the South West Zone is characterized by the highest density of functional facilities nationwide, mainly due to Lagos State, which has the PHC density of 210 facilities per 10,000 km², which is very high compared to the national average (FMoHSW, 2024). Thus, availability, just like access, is not simply a question of geography from North to South. Training pipeline data highlight a more traditional North-South Availability disparity on the dimension of future labour supply: 73% of Nigeria’s medical schools and 77% of Nigeria’s dental schools are located in the South, while 61% of nursing/midwifery schools and 62% of dental therapy schools are located in the North (FMoHSW, 2024), which is a labour division that has historically allocated the most prestigious and wealthy health-care cadres to the South.

4.3 Accessibility

Of all the dimensions assessed in this paper, accessibility reveals the clearest and most consistent North-South divide. Data from nationally representative surveys of facility-based deliveries reveal the lowest prevalence in the North West, at 9.3% in 2008, 12.8% in 2013, and 16.4% in 2018, compared to the South East's 80.8% in 2018, the highest in the nation (Olubodun et al., 2024). Skilled birth attendance is no different; the North West and North East have prevalences of 16.6% and 23.1%, respectively, while the South West and South East report the highest figures of 84.6% and 83.6%, respectively (Abdulraheem et al., 2025). In a meta-analysis of the care-seeking behavior of rural women in Nigeria, only 41% of the pooled rural respondents reported having a skilled birth attendant during childbirth; unskilled birth attendance was significantly more common (OR 2.07, 95% CI 1.17-3.64); this is clearly

relevant to the more rural north (Onyeabor et al., 2026). Underlying all these facts is the workforce-distribution issue noted earlier; 62% of Nigeria's doctors and nurses practice in the south, compared to 28% in the north (10% in the FCT), while the doctor-to-population ratio is 2.9 per 10,000 nationally, a sixth of the WHO recommendation of 17 per 10,000 (FMoHSW, 2024)

4.4 Affordability

The healthcare system in Nigeria is highly out-of-pocket-funded. For instance, the National Health Accounts for 2017 noted that 77.5% of current health expenditure was out-of-pocket funded (FMoH, 2019). However, in a 2025 review of Nigeria in the World Bank's data, the out-of-pocket funding was 79.4%, with the government's contribution at 9.9% (Ezenduka et al., 2025). In 2024, the proportion of the population with health insurance was only 9%, while the utilisation rate was 17.5% (FMoHSW, 2024). According to the National Health Accounts for 2017, one of the dimensions of resource and infrastructure inequalities in the Nigerian health system includes the North-South dimension, among others (FMoH, 2019), but the document does not report out-of-pocket funding by zones. This makes comparison of Affordability difficult using this dimension in this research because it does not give specific figures. However, there is an indication from the zonal dimension within the BHCPF: the fourth antenatal visit was consistently higher at facilities that receive support from the BHCPF than those without such support; in some cases, the number of visits was even double (FMoHSW, 2024).

4.5 Accommodation

However, Accommodation, how services are organized to cater to the client's needs, and if staff have the necessary skills to facilitate breastfeeding are shown by a consistent, albeit not as striking North-South gradient in the available data, complemented by significant internal heterogeneity within each of the two regions. In a nationwide assessment of 25,840 public PHCs, a mean quality of care (QoC) score of 2.07 (scale 0.06–4.0) was obtained, where Katsina State (North West) had the lowest state-level mean of 1.35 and Ondo State (South West) the highest of 2.98 (Oluwatola et al., 2025). A nationwide survey of 1,294 healthcare workers revealed inadequate knowledge of breastfeeding (score 41.2%) across the three domains, and that health workers from the North East were significantly more likely than their peers in the other six zones to exhibit poor breastfeeding knowledge (adjusted OR 0.50, 95% CI 0.313–0.941, $p = 0.029$), despite the same survey having identified the South West as the zone most represented among the respondents (26.6%) and 85.7% of the health workers believing that failure to help breastfeeding mothers will have consequences for their babies, implying that the lack of knowledge is more of a training issue rather than an attitude problem (Alao et al., 2024). The single-state study in Ekiti (South West) serves as an important caveat to the hypothesis that accommodation is always good in the South, reporting an overall score of 47% (0.47 ± 0.18) in maternal and child health service readiness, with commodity availability and life-saving skills being particularly deficient, with significant differences between urban and rural facilities (Oluwole et al., 2022). In sum, there are clear differences in Accommodation by the North-South divide, although the variation within each region, urban versus rural, well- versus poorly-resourced local government area, is sufficiently wide to create a misleading impression of homogeneity of either "the North" or "the South."

4.6 Acceptability

As predicted in the theoretical framework of the research, Acceptability is the dimension for which Nigeria has no national dataset and the information gathered here is indirect in nature.

There are two strands of information relevant here. The first one is related to decision-making autonomy based on gender: Sociological literature on Northern Nigeria mentions the purdah system existing amongst certain groups of Hausa-Fulani, wherein men have primary decision-making power "and the decision to seek care in the health facilities must always be after getting permission from their husbands or in-laws" (Adekeye, 2025). The second one is more pertinent to the South East and South South regions wherein various primary studies and an integrative review on Nigerian practice of EBF all point towards a different issue – "colostrum [being] considered dirty and milk of the breast inadequate without adding water to it", along with lack of support for EBF from the spouse or family members (Oputa-Uzoukwu & Joseph, 2026). Facility-based individual data demonstrate the same trend in the South East and South South regions even in spite of good availability of facilities: a study involving six PHCs of Obio/Akpor, Rivers State (South South) revealed that only 33.9% out of 386 nursing mothers practiced EBF whereas 76.4% of them had used the health worker as their source of information (Jeremiah et al., 2026); a study involving immunization clinics of urban and rural areas in the same state revealed EBF prevalence rates of 66.7% (urban) and 54.0% (rural), both much lower compared to the average rate in the South West zone, although there was a strong influence of knowledge/attitude on the practice in the expected direction (Elegbua et al., 2023); and a community-based survey in Enugu State (South East) revealed 99% awareness rate of EBF and 76% of "good knowledge," but still showed that there were only few people practicing it properly, with the most influential factors being age, education, and employment status, which once again reflects the nature of the problem as a demand-side, rather than supply-side one (Uzoma et al., 2025). Altogether, these Acceptability-related findings may provide at least some explanation as to why the South East and South South underperform the South West and even North regions in spite of higher accessibility of facilities: EBF seems to depend on beliefs of the mothers, husbands and community members more than on facility existence.

4.7 Bringing the dimensions together

Table 3 summarises the direction of the North-South gap across all five dimensions and the EBF outcome itself.

Table 3

Direction of the North-South gap by access dimension and outcome

Dimension/Outcome	Direction of gap	Magnitude (illustrative range)
Availability (facility density, training pipeline)	South favoured, but heterogeneous within region (Lagos-driven; North East dispersion problem)	Moderate
Accessibility (SBA, facility delivery, workforce)	Strongly South favoured	Large (up to ~65 percentage points, SBA/delivery)
Affordability (OOP burden, insurance)	No clear zonal data; national burden very high (≈77–79% OOP)	Not zonally resolved
Accommodation (QoC, HCW breastfeeding knowledge)	South favoured on average, large within-region range	Moderate

Dimension/Outcome	Direction of gap	Magnitude (illustrative range)
Acceptability (proxied: gender autonomy in North; colostrum/water myths in South East/South South)	Mixed, different mechanisms depress EBF in different regions	Not quantifiable nationally
EBF outcome (population-weighted)	**Marginally South favoured (~1.4 points), driven by South West**	**Small**

Out of the five access dimensions, four in particular lean, with varying levels of intensity, towards a Southern advantage in line with H1 predictions regarding Availability, Accessibility and Accommodation. The phenomenon to be explained, the extent of EBF practice - demonstrates however merely a weak and population-adjusted Southern advantage, an order of magnitude less pronounced than that of the Accessibility dimension and solely based on the extreme South West case rather than being a general Southern trend. This is the core descriptive finding of the paper and it answers the second research question directly: none of the five access dimensions displays any kind of a simple, direct correlation with the zonal EBF trend, if anything, Accommodation and Acceptability, the dimensions associated with the way care is delivered and accepted, not necessarily with its availability, are somewhat closer to this pattern than Availability and Accessibility, it is precisely the South East and South South zones where facilities are accessible that display lower EBF rates, whereas North West with poor facility accessibility still has a reasonably high EBF rate (29.6%).

5. Discussion

5.1 Interpreting the hypotheses

H1, that Northern zones would show lower composite scores on Availability, Accessibility and Accommodation, is well supported by the evidence assembled here, particularly for Accessibility, where the North West's facility-delivery and skilled-birth-attendance rates are roughly one-fifth of the South East's and South West's respectively (Abdulraheem et al., 2025; Olubodun et al., 2024).

H2, that Accommodation would be at least as strong a correlate of zonal EBF variance as Affordability, cannot be tested against Affordability directly, since no zone-disaggregated Affordability data were available, but the qualitative correspondence between Accommodation/Acceptability patterns and the EBF outcome (Section 4.7) is more consistent with H2's spirit than a pure Accessibility story would be.

H3, that the access-related component of the gap would not have narrowed proportionally to the national EBF increase, cannot be directly tested with the data available, because the two most recent DHS rounds do not report EBF by zone; this is a genuine evidence gap rather than a null finding, and is flagged explicitly rather than filled with inference.

5.2 Why access and outcome diverge for EBF specifically

What is perhaps the most notable characteristic of the results is the contrast between the robust South-favouring trend with regard to facility-based obstetric indicators on one hand, and the much less robust and quite different trend on the other hand, regarding EBF. An explanation may be found in what exactly each indicator captures. Facility delivery and skilled birth attendance can be defined, almost literally, by a mother's ability to reach a functioning facility and a trained attendant during labour, that is, their Accessibility.

Exclusive breastfeeding, however, is a six-months-long practice at home, which, once past the point of delivery, is entirely within the control of the mother (and her family). The facility can facilitate this process only to an extent of counselling regarding early initiation and rooming in for the first hours or days, but cannot guarantee exclusivity of breastfeeding during the subsequent six months. Thus, EBF is highly sensitive to Accommodation (ability of facility staff encountered to counsel mothers properly) and Acceptability (trust of a family/community in such counselling). This reading explains two seemingly contradictory elements from the literature review for this paper. First, in relation to the integrative review of Nigerian EBF practice, there was the finding that facility delivery was positively correlated with EBF rates and that engagement with health workers was a facilitator factor (Oputa-Uzoukwu & Joseph, 2026) which can be seen as an Accessibility-related element. Second, the same integrative review, along with some of the facility-based South East/South South studies covered in Section 4.6, revealed the dominant barriers to EBF to be myths about colostrum and water supplementation, along with low spousal support (Elegbua et al., 2023; Jeremiah et al., 2026; Oputa-Uzoukwu & Joseph, 2026; Uzoma et al., 2025), even among women delivering at facilities and receiving counselling. The conclusion, therefore, is that facility contact was a necessary but insufficient component: while it provides an access point for counselling, it does not mean that the counselling will override the beliefs present in the population even in the first six months following the end of facility contact. The strong EBF performance of the North West region relative to its poor Accessibility scores makes sense through the same logic: where facility delivery is uncommon, the "exclusivity" of breastfeeding might be just as much about the lack of accessibility of any formula-based alternatives in the post-facility period as about any other factor, including religious/cultural factors supporting breastfeeding, as described in Northern Nigerian gender studies (Adekeye, 2025); while a plausible hypothesis, it is impossible to prove with the data available and must remain one.

5.3 Policy implications

Three implications arise from this synthesis with some degree of caution. First, further investment in Availability and Accessibility within the North West and North East is well-justified in terms of their individual needs, but the size of the gap in the provision of facilities, skilled birth attendance, and workforce density is large, consistent, and correlated with clearly worse performance on Accessibility-bound metrics like under-five mortality rates (140 deaths per 1,000 in the North West compared with 42 deaths per 1,000 in the South West) (Anche et al., 2025). But this synthesis argues that such investment alone should not be considered enough to bridge the EBF gap, especially given that the zones with the greatest Accessibility disadvantage do not perform the worst on EBF measures. Second, based on relatively strong facility Accessibility, the South East and South South emerge from this analysis as the priority zones for Accommodation- and Acceptability-oriented intervention efforts including structured counseling programs for mothers and breastfeeding education programs among health-care workers, as well as community-level debunking campaigns addressing colostrum and water-supplementation beliefs (based on the finding from the national survey that the deficit is largely about knowledge, not attitude; Alao et al., 2024) (Oputa-Uzoukwu & Joseph, 2026). Finally, the North East's demonstrated gap in breastfeeding-related knowledge among health care workers (worse than in all six other zones; Alao et al., 2024) combined with its low Availability and Accessibility rankings makes it a uniquely disadvantaged zone that may require the most comprehensive multi-layered intervention program.

5.4 Relationship to existing literature

The focus of this paper on systems-access factors does not replace, but supplements the considerable existing body of demand-side literature. In their study of socioeconomic inequality of early initiation, EBF and skin-to-skin contact at national level, Ekholuenetale et al. (2022) found that the inequalities were clustered by wealth and maternal education, variables whose role in this paper's Accessibility and Affordability sections suggests that they are partly, but not entirely, downstream of the place of residence and available services for the respective mothers. Similarly, in their systematic review of integrated MNCH interventions in Nigeria, Chima-Oduko et al. (2026) found EBF to be among only three child health interventions associated with consistently positive results, but also pointed to shortage of health workers, poor supply chain management and negative health worker attitude as key implementation challenges, conclusions that fit in well with this paper's Accommodation findings. The one place where this paper stands out most from the majority of the papers it cites is in not accepting "the North" and "the South" as homogeneous entities: the internal divisions within the South between South West/South East/South South, and the internal bias of Southern Availability towards Lagos, are as analytically significant as the North-South divide itself.

6. Limitations

The current study has various limitations which can moderate the use of the results derived therefrom. Primarily, it is a desk analysis of the secondary data already published. The original plan for conducting a multilevel regression analysis with individual EBF status nested in zone-level access scores and controlling for various individual/household confounders was unfeasible due to the lack of access to NDHS/NHFS microdata for the purpose. Thus, all of the comparisons made herein are ecological, meaning that they involve comparison of the average levels for various zones as opposed to individuals themselves and are thus prone to the ecological fallacy – an average access score of a particular zone does not necessarily reflect the access experience of any particular mother therein. Secondly, the zonal EBF landscape is based primarily on the latest available MICS (2021), which reports EBF by zone; the next two rounds of the DHS Key Indicators Report (2023-24 and 2025-26) only report the national EBF levels, thus it cannot be verified if the pattern between North and South (inter-zonal) has remained unchanged since 2021 or become more or less pronounced. This is an acknowledged evidence gap, rather than an issue resolved by the present research. Thirdly, Affordability cannot be assessed at the zonal level since the National Health Accounts and other sources provide OOP burden nationally but not by geopolitical zones. Fourth, Acceptability, unlike the other domains that have been reviewed, lacks an appropriate direct quantitative national dataset, and has therefore been addressed only through proxy qualitative and single study sources; conclusions made on Acceptability in Sections 4.6 and 5.2 should be understood as reasonable interpretation, but not as proven conclusions, since dedicated primary (preferably qualitative) research is required. Fifth, the literature body surveyed for this review has an over-representation of occupational groups in the South West and South South zones (Ekiti, Osun, Oyo, Rivers); this is a factor that was pointed out in the initial research protocol, but can result in a potential biasing of the qualitative component of the South-region findings towards better researched states even when the quantitative NDHS/MICS datasets used are zone-balanced. Lastly, some of the studies that were included in the initial working bibliography prepared for this project (such as those covering North East facility-based breastfeeding support during the regional insurgency, as well as working class mothers in selected South West and South South LGAs) could not be verified via full text, and have therefore been left out of this manuscript's reference list; an extended manuscript will include them after confirmation of their bibliographic details.

7. Conclusion

Northern and Southern Nigeria contrast markedly and consistently across standard measures of access to health systems facilities: skilled birth attendance, delivery in a facility, health worker density, and the readiness to deliver primary health services all are decidedly better for the South, in some cases by very wide margins. However, the Northern/Southern disparity in EBF prevalence is much less pronounced than such access measures would suggest; indeed, it is not really a Northern/Southern disparity at all, but a Southern Wester outlier with a broad middle range comprising the three Northern regions as well as Southern Eastern and Southern Southern. This implies that Nigeria's EBF gap is not simply a matter of facility Availability and Accessibility, the two aspects of access that now predominate in investments in and policies towards health systems, but rather also one of Accommodation, in terms of whether the health providers that mothers actually visit are prepared to offer breastfeeding counselling to mothers, and Acceptability, in terms of whether mothers' families and communities accept and reinforce the advice given at the facility. For Nigeria's health system to eliminate the EBF gap, and not only the facility-delivery gap, its policy focus must move from Availability and Accessibility to Accommodation and Acceptability, especially within Southern East and Southern South, where the facilities are available but EBF is least common in the country.

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