NAS Journal of Public Health and Medical Sciences (NASJPHMS)

Homepage: https://naspublisher.com/nasjphms/

eISSN: XXXX-XXXX [Online] | ISSN: XXXX-XXXX [Print]

Volume 1 • Issue 1 • Nov-Dec, 2026

Food and Water Security as Determinants of Public Health Stability in Fragile States: The Case of Nigeria

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Received	Accepted	Published
10.09.2026	10.10.2026	01.11.2026

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Abstract

While analyses of food and water insecurity often discuss it as a developmental or humanitarian issue apart from public health stability, its causal pathways with public health are immediate, robust, and especially potent in fragile state contexts of weak governance and the attendant constraints that influence their capacity to manage resource paucity. This paper discusses food and water security as structural drivers of public health stability in Nigeria, which is positioned amongst one of the most fragile states in the world and suffers periodic droughts, desertification, flooding, and the conflict induced deterioration of water and agricultural systems. Extending the entitlement-failure perspective to food security (Sen, 1981) and well-known water security perspectives, it identifies two key public health pathways of importance: first, the nutrition-infection vicious cycle where food insecurity increases vulnerability to and severity of infectious diseases especially among children, and second, the water-insecurity-to-waterborne diseases causal loop driven by the absence of safe, adequate and affordable water access and hygiene infrastructure. In fragile state contexts like those found in Nigeria's North East, Lake Chad Basin or farmer-herder middle belt corridors food and water insecurity interact with conflict and weak governance to generate vicious policy feedbacks: dearth of water and food fuels conflict and

displacement, which weakens their access to reliable food and water systems, in turn increasing susceptibility to food- and waterborne disease outbreaks (Ioryue, 2024; IFPRI, 2026). Policy implications are drawn out on how to use food and water insecurity metrics in a country's public health early warning system, as well as how humanitarian, development, and health funding channels could be brought to bear on a collective threat.

Keywords: food security, water security, fragile states, public health, Nigeria, malnutrition, WASH, environmental security

Introduction

Several upstream requirements are easy to view as distinct from health policy itself, upon which health public health sustainability is founded: guaranteed access to sufficient food, guaranteed access to clean water. When such conditions are not met, population health consequences are neither deferred nor indirect: poor nutrition and waterborne diseases accompany food and water insecurity via well-established biological and epidemiological routes (Scrimshaw et al., 1968). This paper proposes that where governance capacity to manage resource competition and services delivery is compromised, as in fragile states, such upstream determinants should be central rather than auxiliary to public health policy and design.

Nigeria serves as an especially valuable example. It is blessed with resources, but threatened by geographically focused and intense food and water insecurity as a result of climatic stress, conflict, and weak governance (Utsev, 2026). Standard food security literature has followed Amartya Sen's concept of the entitlement failure and identified food insecurity as rare an issue of total aggregate quantity, and not a matter of groups of individuals unable to command sufficient food through production, markets or transfer entitlements, a conception applicable to Nigeria’s conflict-ravaged North East, where agricultural production and market access are devastated independently of global food abundance (Sen, 1981; The Citizen, 2025).

Likewise, the field of water security has long differentiated between physical water scarcity, and the failure of the institutional or technical structure to manage and deliver it efficiently, safely and securely (Grey & Sadoff, 2007). Nigeria’s water insecurity draws on both conditions: physical stresses in the north as a result of drought and the desiccation of Lake Chad Basin (African Development Bank, 2024), and a deficient water, sanitation and hygiene (WASH) infrastructure across most of the country irrespective of water resources quantity (Save the Children International, 2026). The Honorable Minister of Water Resources and Sanitation has publically called for water security to be incorporated into the nation's national security framework and cautioned against it fueling public health crises, displacement and resource-based conflict (Utsev, 2026; Vanguard, 2026).

The analytical steps involved are as follows. The first section articulates a framework for analyzing how food security, water security, and fragility (a concept relating to the weaknesses in a state's ability to manage its populations and institutions) jointly affect people's health. The second section illustrates the mechanisms of the food-insecurity-to-health linkage using the food-insecurity-to-health pathway-primarily within the context of malnutrition-infection nexus in Nigeria.

Third, it illustrates mechanisms of the water-insecurity-to-health linkage using WASH failures and resulting water-borne disease.

Finally, it explains how these two mechanisms together reinforce a feedback loop of fragility which increases when interacted with conflict and weakness in governance mechanisms using the context of Lake Chad Basin as well as middle belt farmer-herder corridor as concrete examples. There is a section to further elaborate policy implications, limitations and future research agenda of this article.

Literature Review

Conceptual Framework: Resource Security as a Health Determinant

Conventionally, food security is conceptualized along four dimensions; availability, access and utilization of food, and stability of all three over time (FAO, 1996). The dimensions least affected by crisis in fragile and conflict-affected states tends to be availability and stability, because food systems could potentially retain aggregatel level sufficiency at the national level, and still be unattainable to affected populations, due to loss of entitlements-production capacity, income or market access-(Sen, 1981). The situation in Nigeria's food systems offers evidence of this scenario where available and increasing rates of food insecurity is observed in the NE states since 2018(The Citizen 2025), with figures indicating that number of people requiring emergency food assistance is projected to increase by at least four million in the lean season every year since June 2020(The Citizen 2025).

Water security frameworks too, similarly differentiate physical availability with reliability and safety of access, and argue that water insecurity is more an issue of governance and infrastructure failure, rather than merely physical constraint (Grey & Sadoff, 2007).70% of children are not accessing Water, sanitation and hygiene (WASH) in Nigeria, leading to an increased incidence of diseases such as diarrhea, cholera and typhoid fever (Save the Children International 2026).

State fragility scholarship, in the meantime classifies fragility as an enfeebled capacity by state entities to adequately undertake core governing functions, such as the ability to provide access to water on a consistent level, and create environment under which food systems can be sustained.

can function.

This article looks to the interaction of the three drivers of health outcomes - food security, water security and state fragility-as inter-acting rather than distinct policy arenas, reflecting resource scarcity-and-conflict analysis which has long recognized that environmental and resource stress reinforces rather than replaces governability capacity in a country's propensity for instability (Homer-Dixon, 1994). A strong health mechanism linking food insecurity to health outcome is recognized in nutrition and immunity literature where both the likelihood and severity of common infections are enhanced through weakened immunity among undernourished children due to protein-energy and/or micronutrient deprivation, with infections in turn contributing to poorer nutritional state among those infected (a "malnutrition-infection vicious cycle") (Scrimshaw et al., 1968). A similar mechanism for water security exists through inadequate WASH infrastructure which allows for waterborne pathogens (such as Vibrio cholerae, and organisms that cause the majority of diarrheal diseases) to propagate and transmit at disproportionate rates among children (Save the Children International, 2026; Punch Healthwise, 2026).

Food Insecurity as a Health Determinant in Nigeria

There is noticeable geographic concentration of and strong association between food insecurity in Nigeria with levels of exposure to conflict. Many of the harshest recent classification of food insecurity events were associated with North East Nigeria which was the most affected by the insurgency led by Boko Haram and Islamic State West Africa Province; in which in the recent Cadre Harmonis analyses a significant majority populations fell into crisis or emergency food insecurity categories (The Citizen, 2025); while currently north-west and segments of north-central parts were deemed to be crisis for their levels of severity of food insecurity/malnutrition, becoming major areas of hunger hotspot that requires urgent policy intervention (The Citizen, 2025). This has clearly shown the concentration and correlation between conflict and food insecurity. That points to a entitlement-failure view; since it was not the national changes in food availabilities but the insurgencies' operations, limiting the areas under farming, damaging the market and large number of displaced peoples removing individuals from sources of production and earning that led the agricultural output down in the regions (Sen, 1981; IFPRI, 2026).

The nutritional problem is then directly tied to the sickness-malnutrition vicious cycle. Over a quarter of a million severely malnourished children in Nigeria have been treated in Mdecins Sans Frontires (MSF) outpatient centres since the beginning of 2026 and over 76,000 dangerous complication related malnourished children needed hospital admission (MSF, 2026). This organisation has warn that the crisis is "neither seasonal nor temporary, it has transformed into a protracted humanitarian emergency fueled by inflation, displacement, insecurity and a collapsed healthcare system" (MSF, 2026). Since January 2026 alone there have been almost 28,000 malnourished children in Bauchi State needing treatment, which is in dramatic contrast to the same time in 2025 and 2024 (MSF, 2026).

This dynamic is compounded further by displacement. An estimated 295,000 IDP for war or conflict were reported by The Citizen, 2025 in Nigeria alone (in such states as Benue, Borno, Katsina, Sokoto, Yobe, Zamfara); such frequent violent attacks have resulted in deaths and the displacement of farming populations, in many of Nigeria's key agricultural outputs. A study, reported by The Citizen, 2025, indicates that nearly 52.44% of its respondents in Niger state were food insecure because of diverse insecurity activities such as roadblocks, killings, kidnappings and disruption of market functions. With such forecasts as those predicted by the Nigerian government (almost 33 million Nigerian have already been identified at risk of serious food insecurity during the lean season between June and August in 2026 and 7million more than for the same period of last year) it is likely that the problem is only going to worsen.

Water Insecurity as a Health Determinant in Nigeria

Physical Water insecurity in Nigeria: The physical dimension of Nigeria's water insecurity has been captured in the Lake Chad Basin context in the conceptual framework discussed above. The Lake Chad Basin has experienced profound shrinkage in the last several decades, falling to over 90 percent of its original size in 1964 to date, largely due to climatic change, irrigation expansion and other forms of water demand-driven abstraction (African Development Bank, 2024; The Water Diplomat, 2024). The shrinkage of the lake has significantly altered the livelihoods of the local inhabitants, thereby exacerbating local conflicts, displacement and general insecurity in the area. The African Development Bank (AfDB) has signed a Memorandum of Understanding with the Lake Chad Basin Commission on

measures intended to restore the Lake Chad Basin, harnessing finance and human capital towards a better management of its resources for human livelihood and the restoration of peace there (African Development Bank, 2024).

Infrastructure deficiency: infrastructural deficiency in Nigeria's water insecurity can be observed through the existing gap between national coverage of water, sanitation and hygiene (WASH) access and universal access. In rural and war stricken regions, the disparity remains massive. As observed from the report by Save the Children International (2026), around 70% of children in Nigeria do not have adequate access to washing, hygiene and sanitation (WASH) infrastructure. Nearly 10 million school children lack access to adequate WASH in their schools, and as high as 70,000 children under the age of 5 years lost their lives due to diarrhoeal diseases in Nigeria on a yearly basis (Save the Children International, 2026). In fact,22 per cent of Nigeria's population practiced open defecation, thereby greatly increasing the risks of water-borne diseases and general environment contaminations (Save the Children International, 2026).

These deficits directly cause recurrent water-borne disease burden. Cholera occurred on a massive scale in Nigeria in 2026, media discussion of this occurrence increased by over 400% during peak reported incidence in June (medRxiv, 2026). Borno state had over 8,574 recorded cases, with 85 deaths between May1, 2026 and June7, 2026, with state capital Maiduguri as a major center of the epidemic given her highest population concentration and congestion of displacement camps (Save the Children International, 2026; AllAfrica, 2026). From a 2026 Flood Outlook report, 1,249 communities within 176 LGAs of 30 states and the FCT were reported to be of high flood-risk as flooding events were historically known to cause WASH infrastructure to be flooded creating an epidemic of cholera outbreak (Utsev, 2026; Vanguard, 2026). The combination of extremely high population concentration and poor WASH situation gives for extremely high risks of water-borne disease transmission to the population in general and very high levels in displacement camps and slum settlement regions of the country as a whole (Save the Children International, 2026).

The Fragility Feedback Loop: Where Resource Insecurity, Conflict, and Health Instability Reinforce Each Other

The two sections above are concerned with the relatively linear causal relationships of food and water insecurity as pathways to ill health. However, this section takes argument that in Nigeria's most vulnerable zones, food and water insecurity interact with conflict and governance fragility to create a negative feedback loop rather than being independent, additive risk factors. In the Lake Chad Basin, drought has depleted the water sources it used to sustain agriculture and pastoral livelihoods. The decline has generated population movement and economic crisis which has intersected, although not been solely caused by, the insurgency that afflicts the region (African Development Bank, 2024; The Water Diplomat, 2024). The lake provides sustenance and livelihood for approximately 2 million and food security to an additional 45 million in the Basin (The Water Diplomat, 2024) but dwindling lake waters have led to displacement of an estimated 3.2 million (majority are Nigerian citizens -2.2 million) (The Water Diplomat, 2024).

This leads to migration to unprepared garrison communities with insufficient wash facilities and raises the likelihood of waterborne illness (Save the Children International, 2026) at the same time destroying

the capacity to produce food to restore food security when the opportunity finally allows (The Citizen, 2025). This vicious cycle whereby resource lack spurs conflict/displacement, which negatively impacts water/food sources which generates poor health, which undermines governance/economic strength to recover and breaks the cycle. A parallel but different dynamic marks Middle Belt farmer-herder conflict, which also features struggle for dwindling, climatologically stressed land and water leading to violent farmer-herder conflict, the subsequent displacements, agriculture damage and food system degradation and WASH breakdown (Ioryue, 2024; IFPRI, 2026). Farmers-herders conflict in Nigeria represents a pressing security challenge with Benue being its epicenter (Ioryue, 2024), that not only entails loss of human lives and property but also erodes social cohesion, increases ethnic and religious fissures and represents an existential threat to food security (Ioryue, 2024). Research from the IFPRI (2026) finds that escalating Fulani militia violence in Nigeria affects not only a reduction in output in the agricultural sector generally and for specific food crops in particular but also impacts in yield per harvested land area while causing a shift by farmers in the types of crops that they are planting and the amount of land they are allocating to their cultivation, leading to reduction of the share of cultivatable land in the total agricultural land and the share of cultivation time with longer term crops.

In both situations, the relevant analytically important takeaway message is that nor resource stress and conflict alone drive each observable health outcome but interaction between them, mediated by limited capacity on the part of governance to managing both resource scarcity and conflict drives increasing health instabilities observed in parts of Nigerian most volatile territories. The survival of system providing for people's well-being represents an aspect of national security (as asserted by Utsev, 2026), making water conservation, universal access to water and sanitation, expanded irrigation facilities and effective drought and flood management crucial strategies for Nigeria's development.

Discussion and Policy Implications

Several policy implications arise from this analysis. Firstly, Nigeria's public health early warning architecture, driven by the Nigeria Centre for Disease Control, would be strengthened by formally incorporating food security (Cadre Harmonis) and water/WASH access indicators alongside conventional disease surveillance, given the documented, specific pathways connecting resource insecurity to outcomes of infectious disease and malnutrition. Research on Nigeria's 2024 cholera outbreak notes that while crisis reporting and mortality dominated coverage (41.5% of articles), system-wide interventions such as those aimed at Water, Sanitation and Hygiene were barely covered (8.2% of articles), pointing towards the importance of more balanced, proactive health communication (medRxiv, 2026).

Secondly, the convergence of the fragility feedback loop and the humanitarian, development, and health-sector responses to the region will likely be most successful if these various sources of financing to Nigeria's most fragile territories are integrated more explicitly with each other than they currently are, in part because it seems most likely that solely sector-specific approaches-e.g., only a health-sector, rather than WASH-infrastructure responsive, cholera response, or humanitarian food assistance which does not also integrate attention to disruption in agricultural access-fail to mitigate outcomes, but fail to mitigate risk of the conditions causing the situation because it can only attend to symptomatology without breaking the positive reinforcing feedback loop. It has therefore been urgent to strengthen, and

sustainably finance, nutrition interventions, primary health services, surveillance, and protection programs for vulnerable populations, lest what appear to be growing health problems within the already unstable Nigerian situation only worsen MSF, 2026.

Thirdly, given the direct role the climate has already played in both these LCB and Middle Belt situations, climate adaptation funds must be understood as health security funds for fragile areas in Nigeria. In April 2024, the African Development Bank provided $241.3 million in funding for several multinational projects in the LCB region that included water resources, transportation, environment, and social services among their listed sector interventions (African Development Bank, 2024). The current Nigerian Minister of Water Resources enumerated 5 priorities to address Nigeria's water insecurity, one of which was "integrate water security with national security, coordinate across all sectors of government, implement strategic and sustained financing investment, build climate resilient systems and National Water Intelligence, and enhance the capacities of both women and youths" (Utsev, 2026).

Fourthly, this analysis strongly supports the general argument that long-term stability regarding health in the world's fragile states can not be achieved by interventions in the health-sector only; if food and water insecurity and collapse of infrastructure were deeply embeded into weak governance and conflict, then any efforts to establish a stable public health situation can only come through commensurate progress on the water, food and governance components of fragilty. Indeed, Nigeria's forthcoming National Water Compact for 2026-2030 addresses Water for People, Food and Planet, representing the sort of whole-of-government approach necessary to address a complex array of interconnected challenges Utsev, 2026; Vanguard, 2026.

Limitations

The literature for the synthesis is based upon second-generation material and humanitarian needs assessment information. Many of these second-generation sources are themselves under the conditions of access often encountered in the most fragile regions of Nigeria, potentially producing systematic omissions in the evidence base regarding exactly those situations of greatest import. The paper attempts to unpack none of the interactions in terms of the food insecurity, water insecurity and conflict contribution towards the resulting health outcomes in question-instead, their impact and combination is analyzed qualitatively and through the qualitative decomposition of an interactive, rather than formal statistical, relationship.

Further research applying rigorous quantitative methodology to isolate interactions could address these issues through the development of a robust evidence base. In Nigeria, and in Nigeria's most vulnerable regions more than anywhere else, existing conditions do not necessarily persist over time and should thus always be contextualized in relation to the time-frame to which the analysis pertains.

Conclusion

Food and water security should not be treated as separate from, but integral to public health stability. The nexus between them becomes most stark in fragile states, where weakness in governance capacity to tackleresource scarcity and conflict weakens stability itself. The interaction of nutrition–infection synergies in conflict food insecurity (MSF, 2026; The Citizen, 2025) waterborne disease recurrence due

to poor WASH infrastructure (Save the Children International, 2026) and a feedback loop enhancing fragility, evident in The Lake Chad Basin and the Middle Belt (African Development Bank, 2024; Ioryue, 2024; IFPRI, 2026), serves as a perfect example with relation to Nigeria. The only real path to durable public health security in fragile states such as Nigeria's most precarious domains, is to address food security, water security and governance capacity together as inseparable public health factors and not disparate development, humanitarian or environmental ones (Utsev, 2026).

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