EFFECTS OF ENVIRONMENTAL SANITATION, HYGIENE PRACTICES, AND WATERBORNE DISEASE PREVENTION ON THE HEALTH OF CHILDREN IN MAIHA LOCAL GOVERNMENT AREA, ADAMAWA STATE

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Keywords

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Abstract

Research problem: *Poor sanitation, unsafe water, and inadequate hygiene practices remain leading causes of waterborne diseases that affect children's health in rural communities. In Maiha Local Government Area of Adamawa State, these challenges persist despite the introduction of the Sanitation, Hygiene and Water (SHAWN) Programme, which aims to curb open defecation, promote handwashing, improve hygiene knowledge, and safeguard child health. Concerns, however, remain regarding the programme's effectiveness in reducing sanitation and hygiene-related health risks among children.*

Methods/theory: *The study was guided by Neo-functionalism Theory, emphasizing the interdependence of institutions in tackling developmental issues. A mixed research approach was employed, combining quantitative and descriptive methods. Data were collected using structured questionnaires administered to households on sanitation and hygiene practices.*

Results: *Findings indicated that access to improved sanitation, hygiene awareness, and clean water significantly reduced the incidence of waterborne diseases among children in Maiha LGA. The SHAWN Programme was effective in eliminating open defecation and promoting behavioural change toward proper hygiene practices, contributing to better child health outcomes.*

Conclusion: *Sanitation and hygiene interventions are essential for reducing child morbidity caused by waterborne diseases.*

Strengthening and sustaining such interventions remain critical for long-term health improvements.

Key Contribution to Knowledge: *The study provides empirical evidence on the impact of community-based sanitation and hygiene programmes in improving child health outcomes in rural contexts.*

Recommendation: *Government should expand access to improved toilet facilities and safe water sources across households and public areas in Maiha LGA.*

Introduction

The health and well-being of children are fundamental to sustainable development and cannot be achieved in isolation. Children rely heavily on the support of adults within their households and communities to thrive in environments that foster learning, growth, and overall wellness. Bevan, Riley, Moon, and Forrest (2011) define children's health as the capacity of children or groups of children to develop and utilize their physical, biological, and social potential to interact effectively with their environment.

Across several African countries, the challenges of inadequate environmental sanitation, poor hygiene practices, and the spread of waterborne diseases remain significant public health concerns. Limited access to clean water and widespread open defecation are common in many parts of the continent. However, adequate sanitation facilities, improved hygiene behavior, and access to safe water are among the most effective interventions for reducing disease burden, especially among children.

The growing issues of rapid population increase, rural-to-urban migration, internal displacement due to conflict, and natural disasters have exacerbated the situation, further straining the already fragile water and sanitation infrastructure in many regions. In Nigeria, particularly, the health of children is adversely affected by poor sanitary conditions, inadequate water supply, and unhygienic practices. Contaminated water sources, overcrowded living conditions, and behavioral patterns such as poor handwashing habits contribute significantly to the prevalence of preventable illnesses among children (Eneji, Eneji, Asuquo & Ubom, 2015).

In several rural communities in Maiha LGA have open defecation. Many residential buildings are constructed without proper drainage systems, leading to frequent flooding and environmental pollution. Practices such as drinking untreated water from contaminated rivers, defecating in open water bodies, and neglecting school-based sanitation and hygiene education programs continue to undermine children's health. These conditions call for urgent attention to sanitation and hygiene education, improved water infrastructure, and community-based health interventions to safeguard the well-being of children in the area.

Despite numerous public health campaigns and interventions, environmental sanitation and hygiene practices remain poor in many parts of Maiha Local Government Area, Adamawa State. Children, who are among the most vulnerable members of the population, are frequently exposed to unhygienic conditions, contaminated water sources, and unsafe waste disposal methods. These conditions contribute to the prevalence of waterborne diseases such as diarrhea, cholera, and typhoid, which significantly affect children's health, school attendance, and overall development. The continued neglect of sanitation infrastructure,

poor handwashing habits, and limited access to clean water pose serious health risks, underscoring the need for an in-depth assessment of how these factors impact child health in the area.

Statement of the Problem

Poor environmental sanitation, inadequate hygiene practices, and limited access to safe drinking water remain major public health challenges in many rural communities of Nigeria, including Maiha Local Government Area of Adamawa State. Children, who are among the most vulnerable groups, often bear the greatest burden of waterborne diseases such as diarrhea, cholera, and typhoid fever, which significantly contribute to childhood morbidity and mortality. Despite awareness campaigns and government interventions aimed at improving sanitation and promoting hygienic practices, recurrent outbreaks of water-related diseases persist, raising concerns about the effectiveness of existing preventive measures. This situation underscores the need to assess how environmental sanitation, hygiene practices, and waterborne disease prevention strategies impact the health and well-being of children in Maiha LGA.

Conceptual Clarification

According to UNICEF and WHO (2019), inadequate sanitation, unsafe water, and poor hygiene practices are responsible for approximately 60% of diarrheal deaths among children under five. These diseases are highly preventable with improved hygiene behavior, safe drinking water, and adequate sanitation facilities. The study further indicates that children in rural areas are more vulnerable due to infrastructural deficits and poor awareness of hygiene practices.

In a study conducted in Nigeria, Eneji, Eneji, Asuquo, and Ubom (2015) examined the impact of sanitation and water access on community health in Cross River State. Their findings revealed a strong correlation between poor environmental sanitation and increased cases of diarrhea, dysentery, and skin infections, particularly among children. The study emphasized the role of behavioral factors, such as open defecation and improper waste disposal, in exacerbating health challenges.

Similarly, Oloruntoba, Folarin, and Ayede (2014) assessed hand hygiene practices among mothers and caregivers in Ibadan, Nigeria. They found that inadequate handwashing practices before food preparation and after defecation significantly contributed to the spread of waterborne diseases among children. The study advocated for increased awareness and hygiene education at the household and community levels to reduce child health risks.

In a rural Ugandan study, Tumwine et al. (2003) demonstrated that the introduction of improved sanitation facilities and hygiene education led to a marked reduction in cases of diarrhea among children under five. The research showed that interventions such as latrine construction, clean water provision, and behavioral change campaigns had a direct positive impact on children's health outcomes.

Furthermore, a community-based study by Osagbemi, Adepetun, and Adepetu (2010) in Kwara State, Nigeria, found that environmental factors like blocked drainage, refuse dumping, and water stagnation were significantly associated with high disease incidence among children. The study called for the integration of environmental health education into primary healthcare programs as a means of improving child health.

These empirical studies collectively affirm that inadequate environmental sanitation and poor hygiene practices are detrimental to child health. They also highlight the importance of community-based interventions, behavioural change strategies, and infrastructural investment in sanitation and water supply to

reduce the burden of preventable diseases among children.

Theoretical Framework

This study is grounded in the Neo-functionalism theory, which was developed in the late 1950s by scholars such as Ernst B. Haas, Leon N. Lindberg, and Philippe C. Schmitter. Originally conceived to explain the process of regional integration, particularly within the context of the European Union, Neo-functionalism has evolved to offer valuable insights into how cooperation among various actor's states, organizations, and institutions can drive collective development outcomes. The theory emphasizes the concept of "spillover," whereby integration or cooperation in one sector naturally extends into others, creating a domino effect of institutional collaboration and policy alignment.

The core tenets of Neo-functionalism include: (1) the role of supranational institutions in facilitating cooperation among member states or actors; (2) the importance of non-state actors, such as civil society and international organizations, in influencing policy and development agendas; and (3) the concept of spillover, where progress in one domain necessitates and stimulates advancement in related sectors (Haas, 1958; Lindberg, 1963). These principles suggest that sustained collaboration, especially through shared goals and frameworks, can lead to broader and more effective development outcomes.

This theoretical lens is particularly relevant to the present study as it explains the cooperative mechanisms through which international organizations, such as UNICEF and WHO, engage with the Nigerian government across federal, state, and local levels to address challenges related to sanitation, hygiene, and waterborne disease prevention. In Maiha Local Government Area, interventions addressing SHAWN (Sanitation, Hygiene and Water-Related Needs) have been implemented in partnership with local communities, reflecting the collaborative spirit envisioned by Neo-functionalism. The shared commitment to achieving Sustainable Development Goal 6, which focuses on ensuring access to clean water and sanitation for all, demonstrates the kind of cross-sectoral integration that the theory advocates. The success of these efforts depends not only on infrastructure but also on changing behaviours and attitudes toward WASH (Water, Sanitation, and Hygiene) practices such as discouraging open defecation, improving hand hygiene, and treating water before consumption.

Therefore, Neo-functionalism provides a useful theoretical framework for understanding how multi-level collaboration and institutional synergy can contribute to improving child health through enhanced sanitation and hygiene practices. It also supports the idea that addressing WASH issues is not the sole responsibility of local governments but a shared obligation among stakeholders at various levels, working toward a common goal of sustainable public health improvement.

Research Methodology

This research utilized a survey research design to gather primary data from residents of Maiha Local Government Area, Adamawa State. The target population included adult residents across selected wards and communities. In areas where houses were not arranged along formal streets, respondents were randomly selected using a systematic sampling technique. The selection interval was determined by dividing the estimated number of households in each community by the required sample size for that community. This approach ensured adequate representation across the LGA.

A quantitative and descriptive research method was employed. Data collection involved direct observation and the

administration of structured questionnaires. A total of 90 questionnaires were distributed, and 85 (94%) were successfully retrieved and considered valid for analysis. Data were analysed using descriptive statistics, including frequencies, percentages, and tabular presentations.

Sample Size of Wards, Communities, Households, and Selection Intervals in Maiha LGA of Adamawa State

Table 1: Distribution of Sample in Selected Wards and Communities in Maiha LGA

S/N	Ward	Communities Sampled	Estimated No. of Households	Sample Size	Administered	Retrieved	Selection Interval
1	Sorau	i. Sorau Tudu ii. Mayo Nguli	115, 98	3, 3	6	6	38, 33
2	Belel	i. Belel ii. Wuro Alhaji	130, 102	4, 3	7	6	33, 34
3	Humbutudi	i. Humbutudi ii. Rugange	120, 110	3, 3	6	6	40, 37
4	Mayo Nguli	i. Nguli Tudu ii. Gangwari	150, 90	4, 3	7	7	38, 30
5	Jalingo	i. Jalingo Tudu ii. Gariyo	110, 100	3, 3	6	5	37, 33
6	Pakka	i. Pakka Sarki ii. Mubi Pakka	140, 105	3, 3	6	6	47, 35
7	Dilchim	i. Dilchim ii. Gurumpawo	125, 112	3, 3	6	6	42, 37
8	Konkol	i. Konkol Central ii. Wuro Gude	118, 85	3, 2	5	5	39, 43
9	Mbilla	i. Mbilla ii. Gari Lamorde	100, 92	3, 3	6	6	33, 31
10	Sorau B	i. Wuro Bokki ii. Sorau Jauro	90, 85	3, 3	6	5	30, 28
11	Belel B	i. Mayo Nguli II ii. Gari Maiha	95, 100	3, 3	6	5	32, 33
12	Mayo Nguli B	i. Rugange II ii. Pakka Nguli	110, 104	3, 3	6	6	37, 35
13	Maiha	i. Maiha Central ii. Duhu	100, 95	3, 3	6	5	33, 32

Total Wards Surveyed: 13 Total Questionnaires Administered: 90 Retrieved: 85
Source: Field Survey, 2025

Result and Discussion

Table 2: Common Diseases of Children in the area

Response	Frequency	Percentage
No response	4	5
Diarrhea and other water related diseases	33	39
Cholera, skin diseases, malaria, measles, fever and other poor sanitation, hygiene related diseases	40	47
No idea	2	2
Poor hygiene	6	7
Total	85	100.0

Source: Field Survey, 2025.

Table 2 shows that the majority of respondents in Maiha LGA attribute common childhood diseases to poor sanitation, hygiene, and unsafe water. Specifically, 47% identified illnesses like cholera, malaria, and skin diseases as sanitation-related, while 39% linked them to water-related causes such as diarrhea. A smaller percentage had no idea (7%), gave no response (5%), or cited poor hygiene specifically (2%). Overall, 86% of respondents recognized environmental factors as major contributors to child illnesses, underscoring the need for improved WASH interventions in the area.

Table 3: Disposal of Waste Water Generated in the Household before WASH Intervention

Response	Frequency	Percentage
No response	3	4
Throw on the streets	53	62
Within the courtyard	20	24
Throw into the gutter	9	10
Total	85	100.0

Source: Field Survey, 2025.

Before the WASH intervention in Maiha LGA, most households disposed of wastewater unsafely, with 62% throwing it onto the streets and 24% within courtyards. Another 10% used open gutters, while 4% gave no response. These practices posed serious health and environmental risks, underscoring the urgent need for sanitation education, infrastructure, and behaviour change initiatives.

Table 4: Disposal of Household Refuse after WASH Intervention

Response	Frequency	Percentage
No response	4	5
Nearby stream	25	29
Gutter	10	12
Dump site	40	47
Courtyard	6	7
Total	85	100.0

Source: Field Survey, 2025.

Following the WASH intervention in Maiha LGA, 47% of households now dispose of refuse at designated dump sites, showing improved hygiene practices. However, 29% still use nearby streams, 12% use gutters, and 7% dispose of waste in courtyards, indicating continued risks to health and the environment. With 5% giving no response, the data suggest progress, but also highlight the need for sustained community education and better waste management infrastructure.

Table 5: Excreta Disposal Facilities after WASH Intervention

Response	Frequency	Percentage
No response	2	2
Sato toilet	61	72
Open field (bush) defecation	6	7
Pour flush latrine	11	13
Chamber pot	5	6
Total	85	100.0

Source: Field Survey, 2025.

After the WASH intervention in Maiha LGA, 72% of households adopted Sato toilets, indicating a strong shift toward improved sanitation. However, 7% still practice open defecation, and 6% use chamber pots, reflecting ongoing health risks. Pour flush latrines are used by 13%, while 2% gave no response. Overall, there is notable progress, but further awareness and support are needed to eliminate unsafe disposal practices entirely.

Table 6: Type of Hygiene Facilities in Schools after WASH Intervention

Response	Frequency	Percentage
No response	3	4
VIP latrines, tippy taps, hand pumps, Sato toilet, boreholes.	65	76
Soap/ash, water and kettle	9	11
Hand washing sanitizer	8	9
Total	85	100.0

Source: Field Survey, 2025.

Following the WASH intervention in Maiha LGA, 76% of respondents reported that schools now have improved hygiene facilities such as VIP latrines, tippy taps, hand pumps, Sato toilets, and boreholes. Additionally, 11% noted the availability of soap or ash with water and kettles, while 9% mentioned the use of hand sanitizers. Only 4% gave no response. Overall, the data reflect significant progress in school hygiene infrastructure, though sustained efforts are needed to maintain and expand these improvements.

Table 7: Impact of SHAWN on Infant/Child Mortality and Morbidity

Response	Frequency	Percentage
No response	4	5
Negative	6	7
Highly negative	5	6
Positive	53	62
Highly positive	17	20
Total	85	100

Source: Field Survey, 2025.

The majority of respondents (82%) perceived the SHAWN intervention as having a positive or highly positive impact on reducing infant and child mortality and morbidity in Maiha LGA. A smaller portion (13%) viewed the impact as negative or highly negative, while 5% gave no response. Overall, the findings suggest SHAWN has been effective in improving child health, though efforts should continue to address remaining concerns and ensure all communities benefit equally.

Conclusion

This study examined the impact of environmental sanitation, hygiene practices, and waterborne disease prevention on the health of children in Maiha Local Government Area of Adamawa State, with a focus on the effects of the SHAWN (Sanitation, Hygiene, and Water-related Needs) intervention. The findings revealed significant progress in public health awareness and sanitation behavior following the WASH program implementation.

The survey showed that poor hygiene and unsafe water were major causes of childhood diseases in Maiha LGA before the WASH intervention. Waste disposal practices were unsafe, but after the SHAWN program, there was a clear shift to safer methods like Sato toilets and dump sites. Schools also improved with better sanitation and hygiene facilities. Most respondents noted a significant drop in child illness and death due to better access to clean water and hygiene. While progress is evident, continued education, infrastructure, and policy support are needed to sustain and expand these gains.

Recommendations

The study recommends the following thus:

i. The government should expand access to improved toilet facilities (e.g., Sato toilets, VIP latrines) and provide clean water sources in households and public areas across Maiha LGA.

ii. Schools should integrate hygiene education into their curricula and conduct regular health and hygiene awareness campaigns to encourage good practices among students.

iii. Local and state governments should develop and enforce structured waste collection and disposal services to address environmental and health challenges.

iv. Community members and private individuals should actively engage in and support community-led sanitation efforts such as CLTS to ensure ownership and sustainability of WASH practices.

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