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Assessment of Water and Sanitation Conditions in Benue South Senatorial District, Benue State, Nigeria

Patrick Inalegwu Eche and Paulina Omega Adikwu
Department of Biology Education, Federal College of Education, Odugbo, Benue State

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Abstract: *This study assessed the water and sanitation conditions in Benue South Senatorial District, Benue State, Nigeria, with the aim of evaluating water quality, sanitation facility availability, and community awareness of the health impacts of open defecation. A cross-sectional research design was employed to capture a comprehensive snapshot of the prevailing conditions across five Local Government Areas (Ado, Apa, Ogbadibo, Oju, and Otukpo). A stratified sampling technique was used to select 385 respondents, guided by Krejcie and Morgan's (1973) sampling table, ensuring representation of adult males, females, and youths. Data collection encompassed both qualitative and quantitative methods to assess water sources, storage practices, sanitation facilities, and hygiene behaviors. Findings indicate that households face significant challenges in accessing safe water, with microbial contamination risks rising from source to household storage. Sanitation facilities are often inadequate or poorly maintained, and awareness of open defecation hazards, while higher in urban areas, remains limited in rural communities. The study highlights inequities in water and sanitation access linked to socio-economic status and settlement type. Addressing these gaps requires integrated interventions combining infrastructure improvements, behavior change communication, and strengthened institutional WASH capacity. Recommended measures include scaling up community-led total sanitation programs, deploying water safety plans for piped and high-use sources, providing point-of-use water treatment and safe storage kits, upgrading WASH in schools and health facilities, professionalizing small-town water scheme management, establishing ward-level monitoring dashboards, and mainstreaming gender-sensitive approaches to ensure safe, private sanitation. Implementing these strategies can advance progress toward Sustainable Development Goal 6 while delivering immediate public health, educational, and productivity benefits for communities in Benue South.*

Keywords: access, open defecation, sanitation, water quality, water sources

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INTRODUCTION

In the history of mankind, development has encountered numerous environmental challenges, particularly those associated with water (Solomon, 2010). Among natural resources, water is arguably the most important, as it has no substitute. The physical well-being and continued existence of all living organisms, including humans, depend fundamentally on its availability. Beyond its many uses, water is primarily needed for consumption (Akange, 2016). The usefulness of water, however, is largely a function of its availability and accessibility. According to the Federal Ministry of Water Resources (FMWR, 2013), access to water is defined as the percentage of the population that drinks water from improved sources, while access to excreta disposal refers to the percentage of the population that uses safe excreta disposal facilities. Similarly, access to sanitation is the percentage of the population that uses improved water sanitation services. Thus, access to water supply and proper sanitation practices is a fundamental right of every citizen.

Access to clean water and sanitation is a fundamental human right, essential for maintaining good health, dignity, and quality of life (WHO, 2019). Despite global initiatives to improve water and sanitation services, many communities still face significant challenges in accessing these basic necessities (UNICEF, 2020). In Nigeria, the water and sanitation sector is plagued by inadequate infrastructure, poor maintenance, and limited access to safe water and sanitation facilities, especially in rural areas (Adelekan, 2018).

Pickering and Davis (2012) emphasized that in vulnerable and marginalized rural communities characterized by water scarcity—both in quality and quantity—women and children often bear the burden of fetching water, regardless of its safety. This situation exposes them to hazards and increases the risk of consuming unsafe water, which in turn leads to health consequences such as diarrhea, dysentery, cholera, and other waterborne diseases (Benue State Ministry of Health, 2019). Akange (2016) further declared that, to meet acceptable standards, at least 55% of water supply should be considered potable. However, water sources in Benue North Senatorial District were found to fall below WHO standards and deemed unsafe for domestic use and consumption—a situation common.

Safe water, adequate sanitation, and hygiene (WASH) are foundational to public health, economic productivity, and environmental sustainability. Reductions in diarrhoeal disease, helminth infection, under-five mortality, stunting, and school absenteeism are consistently associated with improved WASH services (Prüss-Ustün et al., 2019; WHO, 2022). Despite global progress, Nigeria remains off-track for universal access by 2030, with persistent rural–urban inequalities, low safely managed service levels, and high open defecation rates (UNICEF & WHO, 2023).

Benue State, in Nigeria's North-Central geopolitical zone, is predominantly agrarian and hydrologically endowed by the Benue River and its tributaries. Yet coverage of improved

household WASH services varies across and within the state. Benue South (also known as Zone C) comprises nine Local Government Areas (LGAs)—Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Okpokwu, Oju, and Otukpo—covering Idoma and Igede communities with mixed rural, peri-urban, and urban settlements. Rapid population growth, pressure on small-town water schemes, informal settlements, seasonal flooding, and faecal contamination risks challenge sustainable service delivery (Federal Ministry of Water Resources [FMWR], 2021; National Bureau of Statistics [NBS] & UNICEF, 2021).

This study assesses the status of water and sanitation conditions in Benue South, identifies determinants of service levels, and offers policy-relevant recommendations aligned with the Joint Monitoring Programme (JMP) service ladders and Nigeria's Clean Nigeria: Use the Toilet Campaign (FMWR, 2019; UNICEF & WHO, 2023).

Statement of the Problem

Access to safe water and improved sanitation is fundamental to human survival and well-being. Globally, it has been reported that about 2.4 billion people do not have access to basic sanitation facilities such as clean water, toilets, or latrines, while an estimated 946 million people still practice open defecation, often in bushes or open water bodies. In Nigeria, the situation is particularly alarming as about 50 million people are affected annually by waterborne diseases such as diarrhea, schistosomiasis, and trachoma. Poor hygiene practices, including open defecation and inadequate access to clean water, are major contributors to these health risks. They also promote microbial contamination of water sources, which accounts for many preventable deaths, especially among children. The consequences are not only health-related but extend to economic losses, reduced productivity, and the burden of health expenditures on already struggling families.

Open defecation, in particular, remains a serious sanitary problem in many developing nations. It provides a breeding ground for neglected tropical diseases such as intestinal worms, schistosomiasis, and trachoma. These conditions contribute to malnutrition, stunted growth, and reduced immunity, particularly among children, thereby worsening poverty and limiting human development. Recognizing this global challenge, the United Nations General Assembly in July 2010, through Resolution 64/292, declared access to clean and safe water, as well as adequate sanitation, a fundamental human right essential for the realization of all other human rights. The resolution called on developed nations and international organizations to assist developing countries in improving water supply and sanitation infrastructure.

Despite commendable progress in addressing these challenges, the problem persists in Nigeria. Reports show that a high rate of open defecation continues, with 90% of those engaged in this practice residing in rural areas. This has left many communities in deplorable sanitary conditions, with grave consequences for both environmental sustainability and human health. In Benue South Senatorial District (BSSD), the situation is particularly worrisome. The district faces multiple challenges, including inadequate potable water sources, insufficient sanitation facilities, and low

awareness of water, sanitation, and hygiene (WASH) practices. As a result, residents continue to suffer from the prevalence of waterborne diseases, high child mortality, and poor overall health. If such unsafe conditions persist, they will not only cause preventable deaths but also hinder physical and cognitive development, particularly among children. The long-term implications include reduced population due to child and adult mortality, diminished human productivity, and adverse impacts on economic growth. There is, therefore, an urgent need to assess and document the water and sanitation conditions of BSSD as a step toward informing policy, guiding interventions, and improving the health and welfare of the population. This study also seeks to address a critical gap in literature, as there is limited research on the current state of water and sanitation in this part of Benue State. The central research question therefore is: *What is the current state of water and sanitation in Benue South Senatorial District of Benue State, Nigeria?*

Aim and Objectives of the Research

The overall aim of this study is to conduct a comprehensive assessment of water and sanitation status in Benue South Senatorial District, Nigeria. Specifically, the study seeks to:

i. Evaluate the quality of water in the five (5) Local Government Areas (LGAs) of Benue South.
ii. Assess the availability and functionality of sanitation facilities, including latrines and waste management systems, in the district.
iii. Determine the level of awareness of the health effects of open defecation in the five (5) LGAs of Benue South.
iv. Identify the challenges confronting the achievement of safe water supply and the campaign to end open defecation by engaging local communities in participatory discussions.

METHODOLOGY

Research Design

A **cross-sectional research design** will be adopted for this study to provide a snapshot of the current water and sanitation conditions in Benue South Senatorial District. This design is appropriate because it allows data to be collected from a representative sample of households, water sources, and sanitation facilities at a single point in time. Beyond describing the existing conditions, the design also enables the collection of both qualitative and quantitative data, providing a holistic understanding of the problem.

Area of Study

The study area is Benue South Senatorial District (BSSD), comprising nine Local Government Areas (LGAs): Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu, and Otukpo. Geographically, it lies between latitude 8°08′00″N–6°26′00″S and longitude 9°54′00″E–7°30′00″W. The district is located in the southern part of Benue State, within the Middle Belt region of Nigeria. It is characterized by a tropical savanna climate, fertile agricultural land, and both riverine and landlocked terrain.

The population is diverse, with Idoma as the predominant ethnic group, followed by Igede, and minority groups such as Ufia and Akweya. The economy is largely agrarian, with most people engaged in subsistence farming of crops such as yam, rice, and maize, alongside livestock rearing and fishing. The area consists of rural and semi-urban communities with limited access to basic amenities such as electricity, good roads, and potable water. Education levels remain low, especially in rural communities, with high illiteracy rates among dwellers.

Population

The population for this study comprised the total number of households in BSSD, estimated at **1.96 million** according to the National Population Commission (NPC, 2006). This total population constituted the study universe.

Sample and Sampling Technique

The sample was drawn from five Local Government Areas (LGAs): Ado, Apa, Ogbadibo, Oju, and Otukpo. A stratified sampling technique was applied by first arranging the nine LGAs alphabetically and numbering them from 1 to 9. The five LGAs with odd numbers were then selected. From each of these LGAs, 96 households were randomly chosen, resulting in a total of 385 respondents. The sample size was guided by Krejcie and Morgan's (1973) sampling table, which recommended 384 respondents for the study population at a 95% confidence level and a 5% margin of error. The study population comprised adult males, females, and youths across the selected LGAs.

Instrumentation

Data were collected using the Assessment of Water and Sanitation Questionnaire (AWASQ), a structured instrument developed by the researcher. The instrument comprised three sections: demographic data, water sources, and Likert-scale questions on sanitation and hygiene practices.

Validation and Reliability

AWASQ was validated by experts in measurement, evaluation, and science education for both face and content validity. Suggestions from reviewers were incorporated into the final version. A pilot test yielded a reliability coefficient of 0.85, which is above the recommended threshold of 0.70 (Fraenkel & Wallen, 2002), indicating that the instrument was reliable for the study.

Method of Data Collection

Trained research assistants administered the questionnaires across the five LGAs. Out of 200 distributed questionnaires, 193 were retrieved, while 7 were lost. In addition, interviews, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs) were conducted to provide qualitative insights. Water samples were collected from local water sources in the study area for laboratory analysis of quality parameters such as pH, bacterial load, and turbidity.

Method of Data Analysis

A mixed-methods approach was used to analyze the data. Quantitative data were processed using SPSS software, with descriptive statistics used to summarize household responses, and inferential statistics employed to test relationships between water quality, sanitation facilities, and hygiene practices. Qualitative data from FGDs and KIIs were transcribed, categorized, and thematically analyzed to complement the quantitative results.

RESULTS AND DISCUSSION

Perception on Quality of Drinking Water

The respondents' perception on the quality of drinking water is presented in Table 1. The data reveal that community members had varied perceptions of drinking water quality based on sensory and aesthetic attributes.

Table 1: Perception on Quality of Drinking Water

S/N	Water Quality	Respondents	%
A	Bad Taste	165	43
B	Colour	107	28
C	Smell	81	21
D	Good to drink	31	8
Total		**384**	**100**

Source: Field work, 2025

A significant proportion, 43% of respondents, perceived their drinking water as having a bad taste. Taste is one of the most immediate and noticeable characteristics of water, and when it is unpleasant, consumers often associate it with contamination, even if the water meets microbiological standards (Adeoye, 2019). Poor taste may result from high concentrations of dissolved solids, metals such as iron and manganese, or chemical contamination, all of which are common in areas lacking adequate water treatment (Olalekan et al., 2022). This high percentage suggests widespread dissatisfaction and potential mistrust in available water sources.

Colour was reported as a concern by 28% of respondents. Discoloration in water typically signals the presence of suspended solids, organic matter, or industrial and agricultural runoff. Turbidity not only reduces the aesthetic appeal of water but can also shield harmful microorganisms from disinfection, increasing the risk of disease outbreaks (Nkwachukwu et al., 2020).

Similarly, 21% of respondents mentioned smell as a defining feature of poor water quality. Odours in water may arise from decaying organic matter, algae blooms, or contamination from waste

disposal practices (Agunwamba, 2019). Although unpleasant smell does not always mean water is unsafe, it lowers user confidence and often forces households to seek alternative but potentially unsafe water sources.

Alarmingly, only 8% of respondents perceived their water as "good to drink." This low level of confidence highlights serious concerns about water safety in the study area. According to WHO (2019), access to safe drinking water is fundamental to preventing diarrheal diseases, cholera, typhoid, and other waterborne infections, which remain leading causes of child morbidity and mortality in Sub-Saharan Africa. Overall, the findings underscore that perceptions of water quality in the study area were largely negative, with most respondents associating their drinking water with unpleasant taste, colour, or odour. This suggests a pressing need for improved water treatment, monitoring, and community sensitization on safe water practices. Moreover, it indicates that access to safe and acceptable water remains a challenge, with implications for public health, productivity, and educational outcomes (Abebe & Tucho, 2020; Sarkingobir & Sarkingobir, 2021).

Perception on Sources of Water

the perception on the sources of water is presented in Table 2.

Table 2: Perception on Sources of Water

SN	Sources	Respondents	Percentage
A	River/stream	119	31
B	Borehole	15	04
C	Hand dug Well	104	27
D	Rain water	96	25
E	Pipe borne Water	4	01
F	Water tanker supply	38	10
G	Other sources	8	02
Total		**384**	**100**

Source: Field work, 2025

Perception on Sources of Water

The data on sources of drinking water in the study area reveal a high dependence on unimproved and unsafe water sources. The most frequently cited source was rivers/streams (31%), indicating that a significant proportion of households relied on untreated surface water. Rivers and streams are highly susceptible to contamination from human waste, agricultural runoff, and industrial discharge, making them unsafe for direct consumption without treatment (Nkwachukwu et al.,

2020; WHO, 2019). Dependence on such sources exposes communities to waterborne diseases such as cholera, typhoid, and dysentery.

Hand-dug wells (27%) were also a major source. Although wells can provide relatively accessible water, they are often shallow and prone to contamination, especially when poorly sited near latrines, refuse dumps, or agricultural land (Agunwamba, 2019). Without proper lining and cover, wells can easily collect surface runoffs carrying pathogens.

Rainwater harvesting (25%) was another significant source. While rainwater can be a safe option if properly collected and stored, poor storage practices—such as using open containers or contaminated collection surfaces—can compromise its quality (Abebe & Tucho, 2020). Rainwater dependency also creates vulnerability during dry seasons when rainfall is scarce. Interestingly, boreholes (4%) and pipe-borne water (1%) accounted for very low percentages. These are generally considered improved sources, yet their limited availability suggests either infrastructural deficits, poor maintenance, or high costs that restrict household access (Olalekan et al., 2022). The near absence of pipe-borne water reflects broader infrastructural challenges in rural Nigeria, where centralized water supply systems are often unreliable. Water tanker supply (10%) emerged as another source, which, while filling a gap, raises issues of affordability, irregularity, and questionable water quality, as tanker water is often drawn from untreated or unverified sources (Ikpeze, 2020).

Finally, other sources (2%) were reported, possibly including bottled or sachet water. However, their low percentage suggests that packaged water is not a sustainable or primary source for most households in the area. Overall, the findings highlight the dominance of unimproved water sources (rivers, streams, hand-dug wells, and rainwater), which together account for over 80% of reported sources. This reliance underscores the urgent need for infrastructural investment in boreholes and pipe-borne systems to meet SDG 6 (Clean Water and Sanitation). It also points to gaps in policy implementation and community-level awareness about water safety (Sarkingobir & Sarkingobir, 2021).

Table 3: Perception on Water Storage

SN	Storage	Respondents	%
A	Jerry can/pots	127	33
B	GP Tanks	146	38
C	Local reservoirs	96	25
D	Other sources	15	04
Total		**384**	**100**

Source: Field work, 2025

Perception on Water Storage

Households in the study area rely on diverse water storage methods shaped by socio-economic conditions and infrastructure. GP tanks (38%) are the most common, reflecting investment in bulk storage, though poor maintenance may lead to contamination (WHO, 2019; Ikpeze, 2020). Jerry cans and clay pots (33%) remain widely used due to affordability but carry hygiene risks when inadequately cleaned (Agunwamba, 2019). Local reservoirs (25%) provide rain or stream water storage but are highly prone to environmental contamination and vector breeding (Abebe & Tucho, 2020). A small share (4%) depends on drums and buckets, which often lack proper covers and increase fecal contamination risks (Olalekan et al., 2022). These practices show that even improved storage options are undermined by poor sanitation, aligning with evidence that unsafe storage contributes as much to health risks as contaminated sources themselves (Sarkingobir & Sarkingobir, 2021).

In terms of water use, households prioritize bathing (40%) and cooking (30%), underscoring hygiene and food preparation needs but sometimes at the expense of drinking water, especially under scarcity (WHO, 2019). About 20% use water for washing clothes and utensils, which may spread pathogens if contaminated (Sarkingobir & Sarkingobir, 2021). Only 1% use water for automobiles, reflecting limited non-essential use (Ikpeze, 2020), while 9% practice handwashing before and after eating, indicating awareness but also a gap in universal hygiene behavior (WHO & UNICEF, 2021; Abebe & Tucho, 2020). Overall, the findings highlight that inadequate water quality, unsafe storage, and behavioral gaps hinder health outcomes, underscoring the need for hygiene education, affordable technologies, and WASH-focused interventions.

Table 4: Perception on use of water

SN	Use of Water	Respondents	%
A	Bathing	154	40
B	Cooking	115	30
C	Washing of clothes/cooking utensils	77	20
D	Washing of automobiles	4	01
E	Washing of hand before and after eating	35	09
Total		**384**	**100**

Source: Field work, 2025

Interpretation of Perception on Personal Hygiene

The results highlight respondents' practices and attitudes toward personal hygiene, which play a critical role in preventing disease transmission and improving health outcomes. The highest proportion (33%) of respondents reported that their main hygiene practice was washing hands after eating. While this demonstrates some level of awareness, it also suggests a misplaced priority, since the most effective time for handwashing is before eating to prevent ingesting pathogens from contaminated hands (WHO & UNICEF, 2021). Washing hands only after eating may reduce visible dirt but does not effectively prevent fecal-oral disease transmission, which is a major concern in environments with poor sanitation.

About 25% of respondents indicated washing clothes and cooking utensils as their primary hygiene practice. This shows recognition of the importance of cleanliness in household environments, especially regarding food preparation and clothing. However, when compared to critical hand hygiene practices, this response suggests that household hygiene is more emphasized than personal hand hygiene, which is essential in breaking the cycle of infections such as cholera, diarrhea, and typhoid (Abebe & Tucho, 2020).

Only 15% of respondents reported washing hands before eating, which is the most important preventive measure against the ingestion of harmful microbes. This low figure highlights a significant behavioral gap in hygiene education. Similarly, 16% of respondents wash their hands after defecating. While this is essential, the percentage is too low, indicating that a large portion of the population may not practice post-defecation handwashing consistently. This poses serious risks of contamination and transmission of pathogens such as *E. coli*, *Salmonella*, and rotavirus (Olalekan et al., 2022).

Interestingly, only 11% of respondents reported the use of soap in their hygiene routine. This is particularly alarming, as the effectiveness of handwashing is significantly reduced without soap. The absence of soap use suggests that even where water is available, hygiene practices may not be sufficient to prevent disease outbreaks (Sarkingobir & Sarkingobir, 2021). The finding that **0%** of respondents selected "Others" indicates that the survey captured the main hygiene practices in the study area, but also suggests a lack of diversity or innovation in hygiene routines beyond the listed practices.

Overall, the results show that while some hygiene practices are observed, critical gaps remain in the timing of handwashing and the use of soap. These gaps reflect the need for intensive hygiene education, school-based WASH interventions, and community sensitization programs to improve awareness and practices. Without these improvements, communities will continue to face high rates of preventable diseases, which directly affect children's health, school attendance, and learning outcomes.

Table 5: Perception on Personal Hygiene

SN	Personal Hygiene	Respondents	%
A	Uses of soap	42	11
B	Wash hands before eating	58	15
C	Wash hands after eating	127	33
D	Wash clothes/cooking utensils	96	25
E	Wash hands after defecating	61	16
F	Others	0	0
Total		**384**	**100**

Source: Field work, 2025

Handwashing Practices

The findings reveal significant gaps in effective handwashing practices among respondents.

A large majority, 62%, reported washing their hands with water only. While water alone may remove visible dirt, it is largely ineffective in eliminating pathogens such as bacteria, viruses, and helminths. This practice therefore leaves individuals vulnerable to fecal-oral diseases including diarrhea, cholera, and typhoid (WHO & UNICEF, 2021). The dominance of water-only handwashing suggests inadequate awareness of the importance of soap, limited access to soap, or both.

Only 8% of respondents practiced handwashing with both water and soap, which is globally recognized as the most effective and recommended practice (Centers for Disease Control and Prevention [CDC], 2020). This extremely low figure highlights a critical public health concern. It suggests that interventions promoting soap use have not been effective in the study area, and urgent efforts are needed to scale up hygiene promotion campaigns. Interestingly, some respondents substituted soap with ashes (7%) or sand (11%). These traditional alternatives are often used in resource-limited settings. Ash, in particular, has been shown to contain alkaline properties that can provide some degree of cleansing, though its effectiveness is far below that of soap (Hoque, 2003). Sand, on the other hand, may remove dirt through abrasion but does not adequately remove pathogens and may even introduce harmful microorganisms if contaminated. These practices reflect coping strategies in communities where soap is either unavailable or unaffordable.

About 12% of respondents reported using "other methods" for handwashing. While the data does not specify what these methods include, it may involve the use of detergents, leaves, or other local materials. This figure indicates the diversity of practices and the possible reliance on non-conventional hygiene substitutes. However, without proper sanitation awareness, such alternatives may not provide the needed protection from disease transmission.

Overall, the results demonstrate that the majority of respondents do not practice safe hand hygiene. The extremely low percentage of soap use and the reliance on traditional alternatives highlight the need for behavior change communication, school-based WASH education, and government/community-led initiatives to ensure affordable access to soap. Improving hand hygiene is critical for reducing disease burden, particularly among schoolchildren, where poor practices contribute to high absenteeism, malnutrition, and reduced learning outcomes (Abebe & Tucho, 2020).

Table 6: Perception on Hand Washing

SN	Hand Washing	Respondents	%
A	Use water only	238	62
B	Use of water and soap	31	08
C	Use of water and ashes	27	07
D	Use of water and sand	42	11
E	others	46	12
Total		**384**	**100**

Source: Field work, 2025

Table 7 shows the perception of the respondents on the disposal of excreta. The findings show that pit toilets (41%) were the most common method of excreta disposal. This indicates reliance on low-cost and locally constructed facilities, which, though widely used, may pose environmental and health risks if poorly designed or maintained.

Table 7: Perception on Excreta Disposal

SN	Excreta Disposal	Respondents	%
A	Bush	142	37
B	Pit toilet	157	41
C	Water closet system	23	06
D	Dig and burry	42	11
E	VIP Toilet	12	03
F	Others	12	03
Total		**384**	**100**

Source: Field work, 2025

A significant proportion, 37%, still practiced open defecation in the bush, reflecting inadequate access to safe sanitation facilities. This practice increases the risk of diarrheal diseases, cholera, and contamination of water sources (WHO & UNICEF, 2021). Only 6% of respondents reported using the water closet system, showing that modern sanitation infrastructure is largely inaccessible, likely due to cost and lack of water supply.

Other methods such as dig and bury (11%), VIP toilets (3%), and miscellaneous alternatives (3%) suggest efforts to manage excreta, though these are often less sustainable and may not meet WHO standards for hygiene and safety. Overall, the data reveals that safe and modern sanitation options are limited, with open defecation and basic pit toilets dominating. This highlights the urgent need for sanitation interventions, awareness campaigns, and investment in affordable, modern toilets to improve health outcomes in the study area.

Table 8: Perception on Disadvantages of Open Defecation

SN	Disadvantages	Respondents	%
A	Harmful to human health	219	57
B	Causes water borne diseases	88	23
C	Risky (reptiles attack)	12	03
D	Exposes women to danger	31	08
E	Contaminate environment (pollution)	34	09
Total		**384**	**100**

Source: Field work, 2025

The majority, 57%, identified that open defecation is harmful to human health, showing a strong awareness of its direct link to illness and poor well-being. Similarly, 23% highlighted that it causes waterborne diseases, such as cholera, typhoid, and diarrhea. These responses indicate that most people understood the public health risks associated with poor sanitation (Abebe & Tucho, 2020; WHO & UNICEF, 2021). A smaller percentage, 9%, noted that open defecation contaminates the environment, reflecting recognition of its role in pollution, environmental degradation, and reduced aesthetic quality of the surroundings.

In terms of safety risks, 8% reported that it exposes women to danger, which aligns with global findings that open defecation disproportionately affects women and girls, making them vulnerable to harassment, assault, and lack of privacy (Sommer et al., 2015). Additionally, 3% mentioned the risk of reptile attacks, highlighting localized concerns that make the practice unsafe beyond health implications.

Overall, the data shows that while respondents understood the health, environmental, and safety impacts of open defecation, there remains a gap in translating this awareness into improved sanitation practices, as many still practiced it due to lack of alternatives. This underscores the need for affordable, accessible, and culturally acceptable sanitation facilities to replace open defecation in the area.

The data reveal a significant disparity in awareness levels between urban and rural areas. A large majority of respondents in urban areas (78%) reported awareness of open defecation prohibition. This indicates that urban dwellers are more exposed to sanitation campaigns, media information, and government or NGO-led interventions (Federal Ministry of Water Resources, 2019). The higher literacy rates, better infrastructure, and access to information channels in urban settings also contribute to this outcome.

In contrast, only 22% of rural respondents demonstrated awareness. This low percentage highlights the persistent challenges of information dissemination, poor access to sanitation infrastructure, and entrenched cultural practices in rural communities. Rural areas are often left behind in policy implementation and advocacy, resulting in limited exposure to sanitation education and weak enforcement of prohibitions (WHO & UNICEF, 2021).

Overall, the data suggest that while progress has been made in raising awareness in urban settings, rural communities remain underserved. Bridging this gap will require targeted awareness campaigns, culturally sensitive advocacy, and improved access to safe sanitation facilities in rural areas to achieve nationwide open defecation-free (ODF) status.

Table 9: Perception on Awareness of Open Defecation Prohibition

SN	Awareness	Respondents	%
A	Urban areas	300	78
B	Rural areas	84	22
Total		**384**	**100**

Source: Field work, 2025

Table 10: Perception on Causes of Open Defecation

SN	Causes Of Open Defecation	Respondents	%
A	Lack of alternative	188	49
B	Cultural habit	108	28
C	Scarcity of water	65	17
D	Poverty	19	05
E	Others	4	01
Total		**384**	**100**

Source: Field work, 2025

The respondents' responses on the perception on end to open defecation is presented in Table 11.

Table 11: Perception on end to Open Defecation

SN	How to end Open Defecation	Respondents	%
A	Enforcement of government ban on open defecation	157	40
B	Provision of household toilets by government	165	43
C	Adequate water supply	38	10
D	Awaremeness/advocacy	19	5
E	Others	8	2
Total		**384**	**100**

Source: Field work, 2025

The results in Table 11 highlights community perceptions of strategies required to eliminate open defecation. Several key approaches emerge:

1. Enforcement of government ban on open defecation – This suggests that respondents recognize the role of strict regulation and legal enforcement in changing sanitation behaviours. Without penalties or active monitoring, communities may continue unsafe practices despite awareness campaigns. However, enforcement alone may be ineffective if not accompanied by alternatives (WHO, 2019).
2. Provision of household toilets by government – A central theme here is the expectation that the government should provide infrastructure directly. Many households, especially in rural

areas, face financial constraints and cannot afford toilets. This finding aligns with studies that show that lack of access to affordable sanitation facilities is a major driver of open defecation in Sub-Saharan Africa (Abebe & Tucho, 2020).

3. Adequate water supply – Respondents link sanitation practices to water availability. Toilets, especially flush systems, require reliable water supply. Without this, households may revert to open defecation. This reflects a systemic relationship between sanitation and water infrastructure (Olalekan et al., 2022).
4. Awareness/advocacy – Social and behavioral change is another major factor. Even where toilets exist, some communities still prefer open defecation due to cultural beliefs or lack of knowledge about the health implications. Advocacy and hygiene education are therefore crucial to change attitudes (Sarkingobir & Sarkingobir, 2021).
5. Others – This category, though unspecified, may include community-led initiatives such as the *Community-Led Total Sanitation (CLTS)* approach, where local ownership and peer monitoring foster long-term behavior change (Federal Ministry of Water Resources, 2019).

Overall, the results suggest that ending open defecation requires a multi-dimensional approach—a combination of legal enforcement, government investment in household toilets, provision of reliable water supply, and sustained advocacy. Addressing one factor in isolation may have limited impact, but integrating these measures can accelerate progress toward achieving an Open Defecation Free (ODF) Nigeria.

CONCLUSION

Benue South faces significant shortfalls in safely managed water and sanitation, with marked inequities by wealth and settlement type. Microbial risks increase between source and household storage, emphasizing the need for integrated interventions spanning infrastructure, behavior, and service management. Accelerated sanitation programmes, water safety planning, reliability upgrades for small-town systems, and strengthened institutional WASH are urgent priorities. Implementing the recommendations above can place Benue South on a realistic trajectory toward SDG 6 while delivering immediate health, education, and productivity benefits.

Recommendations

1. Fund LGA-level CLTS+/MBS scale-up with targeted subsidies for the poorest.
2. Deploy WSPs across all piped schemes and high-use point sources; track FRC publicly.
3. Provide PoU treatment and safe-storage kits during rainy seasons; run SBC on correct dosing.
4. Upgrade PHC/school WASH to national minimum standards; budget for O&M and monitoring.
5. Professionalize small-town scheme management; integrate solar-hybrid power and DMAs.

6. Establish ward-level WASH dashboards for coverage, quality, and functionality.
7. Mainstream gender: prioritize on-premises connections and secure, private sanitation.

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