Climate Events and Maternal–Child Health Risks in Gusau LGA, Zamfara State, Nigeria: Evidence from Climatic Trends and Community Health Perceptions

Executive Summary

WHO (2024) postulated that rising temperatures, precipitation changes, droughts and severe storms among other increased occurrences of extreme climate events contribute to the spread of diseases that impact maternal and child health outcomes globally, including northern Nigeria. This policy brief presents empirical findings from a study titled ***"Perceived Effects of Climate Events on Maternal and Child Health in Gusau Local Government Area, Zamfara State."*** The study examined residents' awareness of climate events, the effects of climate events on maternal and child health, and assessed mitigating interventions in the study area. Using survey data from 373 respondents alongside thirty-five years of rainfall and temperature records obtained from the Data Management Unit (DMU) of the Nigerian Meteorological Agency (NiMet), the study found strong statistical evidence associating climate events, especially heatwaves to influencing maternal and child health outcomes.

Key Messages

- Climate events are not merely environmental problems but major public health and development concerns.
- Respondents showed high awareness of prevailing climate events
- Climatic instability evidenced by rising temperature trends and irregular rainfall patterns is already contributing to increased disease burdens and worsening maternal and child health conditions in Gusau LGA
- Climate events accounted for 91.6% of variations in maternal health outcomes in the study area.
- Climate events explained 96.3% of variations in child health outcomes
- Rural residents reported significantly greater vulnerability to climate-related maternal and child health problems than urban residents.
- Without urgent intervention, climate-sensitive diseases and health vulnerabilities may intensify, especially among rural populations.

Introduction

Climate events are sustained, long-term patterns of change in climatic phenomena. Climate events such as heatwaves, flooding, drought, and irregular rainfall patterns negatively affect life support systems, including air, food, water, shelter, and security, on which humans depend. Zamfara State is particularly vulnerable due to its semi-arid climatic conditions, dependence on rain-fed agriculture, and in addition to weak healthcare infrastructure, and widespread poverty.

Women and children remain among the most vulnerable populations because climate events directly and indirectly affect maternal and child health through access to adequate nutrition, availability of water, disease transmission, pregnancy outcomes, and access to healthcare services.

Methodology

The study employed a survey research design. Primary data were generated through FGDs, key informant interviews and structured questionnaires administered to 373 respondents across selected political wards in Gusau LGA using appropriate sampling procedures. The study held two FGD sessions for some selected women and another two FGD sessions for some selected men. Key informant interview sessions involved four healthcare workers and seven government officials from Zamfara State Ministries of Environment, Agriculture and Health.

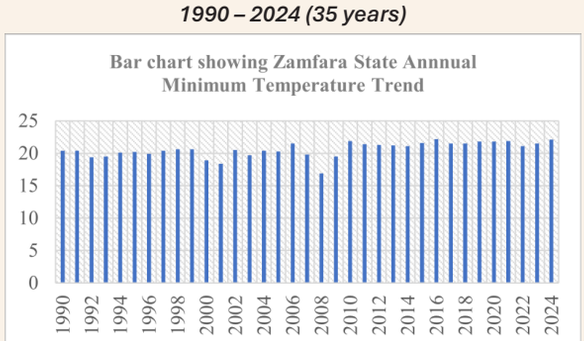
In addition, secondary climatic data on rainfall patterns and minimum and maximum temperature trends spanning thirty-five years were obtained from the Data Management Unit (DMU) of the Nigerian Meteorological Agency (NiMet). Data collected were analyzed using descriptive statistics such as frequency distributions, percentages, mean and standard deviations. While inferential statistical tools including Chi-square analysis, Pearson Product Moment Correlation, Independent Samples t-test, and Linear Regression analysis were used to test hypotheses and determine relationships among variables.

Findings

Descriptive findings showed high awareness of prevailing climate events among residents. Respondents identified the following as the major climate events affecting their communities: Heatwaves, flooding, drought, windstorms, late onset of rainfall, and early cessation of rainfall.

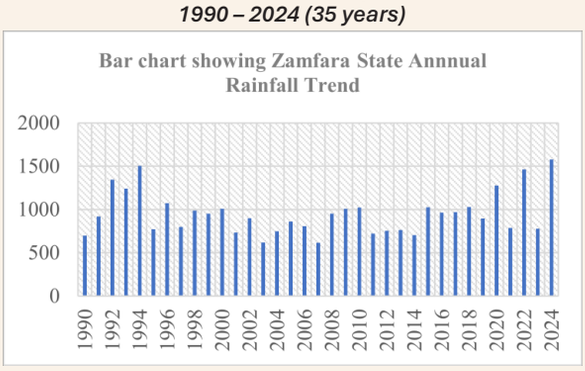
Evidence from Climatic Data (NiMet)

Figure 1: Bar chart showing Zamfara State Annual Rainfall Data *1990 – 2024 (35 years)*



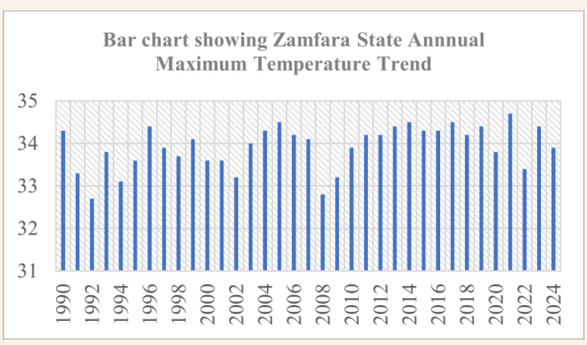
Source: Data Management Unit (DMU), NiMet Headquarters, Abuja, 2026

Figure 2: Bar chart showing Zamfara State Annual Minimum Temperature
1990 – 2024 (35 years)



Source: Data Management Unit (DMU), NiMet Headquarters, Abuja, 2026

Figure 3: Bar chart showing Zamfara State Annual Maximum Temperature
1990 – 2024 (35 years)



Source: Data Management Unit (DMU), NiMet Headquarters, Abuja, 2026

Figure 1, 2 and 3 presents 35 years meteorological data obtained from the Data Management Unit (DMU) of the Nigerian Meteorological Agency (NiMet). The data showed:

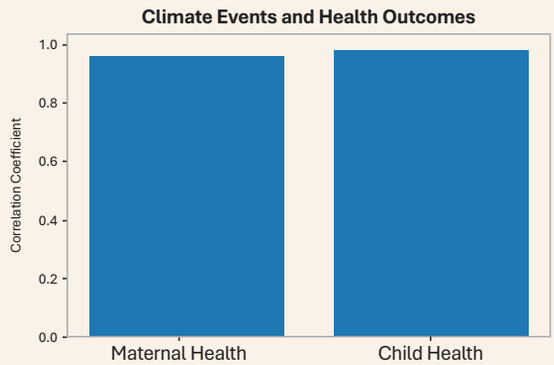
- Persistent fluctuations in annual rainfall patterns
- Increasing minimum temperature trends
- Increasing maximum temperature trends
- Longer periods of heat intensity
- Greater rainfall irregularities characterized by late onset and early cessation of rainfall

By implication, these climatic changes are capable of worsening public health vulnerabilities, particularly among women and children.

Statistical Analysis

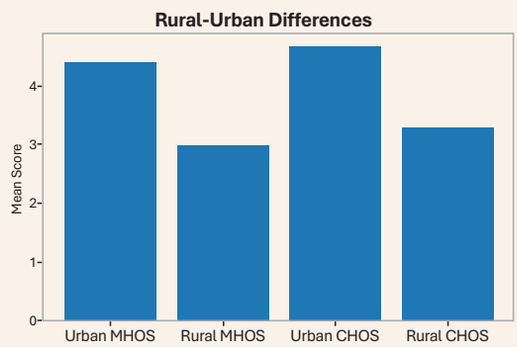
The study established statistically significant relationships between climate events and maternal and child health outcomes in Gusau LGA, Zamfara State. Pearson correlation analysis revealed very strong positive relationships between climate events and maternal health outcomes ($r = 0.957$, $p < 0.001$) and child health outcomes ($r = 0.981$, $p < 0.001$).

Figure 4: Bar chart showing Correlation between Climate Events and Health Outcomes



Source: Fieldwork, 2025

Figure 5: Bar chart showing Rural-Urban Variations



Source: Fieldwork, 2025

- Figure 4 show the Pearson correlation analysis. It revealed a very strong positive relationship between climate events and health outcomes.
- Figure 5 show the Independent Samples t-test. It revealed significant rural–urban differences in perceived effects of climate events on maternal and child health outcomes.

Conclusion

Evidence from both meteorological records and statistical health analyses shows that climate events constitute a growing environmental and public health threat in Gusau LGA, Zamfara State. Rising temperatures and irregular rainfall patterns are strongly associated with worsening maternal and child health outcomes. Women and children, particularly in rural communities, remain disproportionately vulnerable. Addressing these challenges requires integrated climate adaptation policies, resilient healthcare systems, environmental sustainability measures, and targeted support for vulnerable populations. Failure to act may significantly undermine public health, community resilience, and sustainable development outcomes in the region.

Policy Implications and Remmendations

- The study indicates that climate events are not merely environmental problems but major public health and development concerns. Climatic variability evidenced by rising temperature trends and irregular rainfall patterns is already contributing to increased disease burdens and worsening maternal and child health conditions in Gusau LGA.
- Federal and State Ministries of Health need to strengthened community-based climate education.
- There is need to strengthen rural healthcare systems.
- There is need to intensify the promotion of Environmental and Climate Adaptation Strategies e.g. tree planting and urban greening among other things.

Reference

WHO (2024). Analytical Fact Sheet. WHO, African Region

Acknowledgments

TUNICEF || FMoHSW || FMoINO || NETBRECSIN

Citation

Attah, S. & Adegboyega, K. (2026). Climate Events and Maternal–Child Health Risks in Gusau LGA, Zamfara State, Nigeria: Evidence from Climatic Trends and Community Health Perceptions. A policy brief presented at NETBRECSIN Conference, July 2026.

Email: belovedwisdom@ymail.com || adegboyegaayo@gmail.com