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Abstract

Water quality perceptions in rural African settlements remain poorly understood, despite their importance for effective public health and policy design. This study provides the first integrated assessment of community perception and chemical risk in rocky-hill settlements of Southwestern Nigeria. Using household surveys and qualitative interviews, we reveal a sharp dissonance between perceived safety and actual hazards. Residents primarily evaluate water by sensory cues (taste, odor, clarity), overlooking risks posed by elevated levels of fluoride, iron, and manganese, as well as microbial contamination. Limited trust in government-led water interventions further entrenches reliance on local coping practices. By linking community narratives to documented chemical risks, this research highlights an overlooked dimension of environmental justice, demonstrating how perceptual blind spots intensify health inequities and undermine progress toward SDG 6 and the Nigerian National Water Policy.

Discussion & Conclusion

• Communities acknowledge the prevalence of waterborne illnesses but often misattribute their underlying chemical and microbial causes.

• Safety perceptions are largely based on sensory cues (taste, odour, clarity), which can mask invisible risks.

• Trust in institutional and government-led interventions remains limited, with households relying instead on local coping strategies.

• There is an urgent need for culturally grounded and participatory water safety education tailored to rural realities.

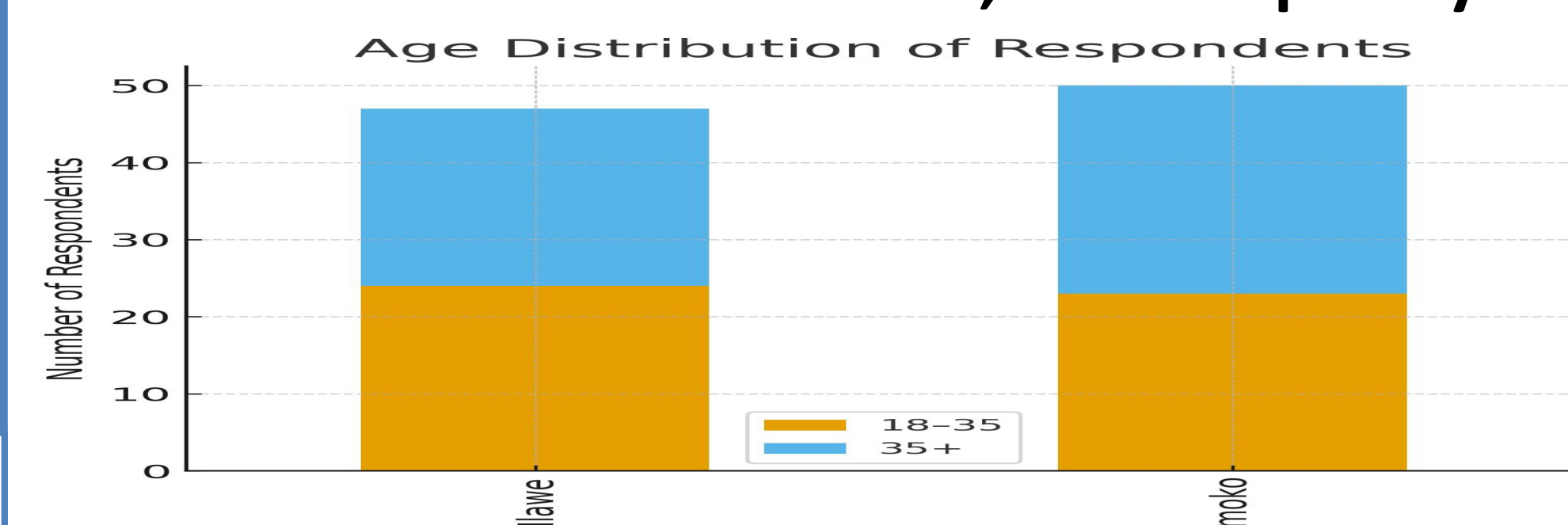
• Embedding community perspectives in policy design is critical for achieving **SDG 6 (Clean Water and Sanitation)** and advancing the **Nigerian National Water Policy** in line with the **African Union Agenda 2063** vision for equitable access to safe water.

Keywords: Environmental justice, rural health, waterborne diseases, perception, SDGs, policy, equity, clean water, community perception.

Acknowledgement: CHEM-CORE Research Group and The People of Illawe and Aramoko Town

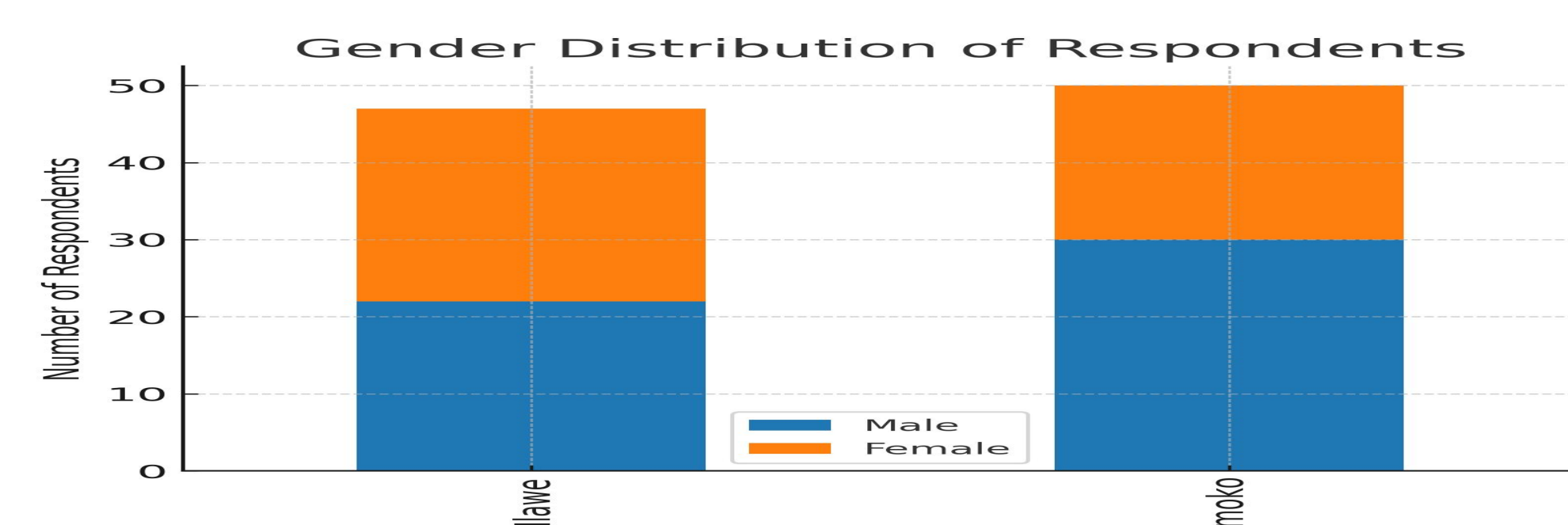
Figure 1–6: Age and Gender Distribution of Respondents, Main Water Sources, Perceived Water Clarity, Water Treatment Practices, and Frequency of Water-Related Illness in Ilawe and Aramoko Communities

Age Distribution of Respondents



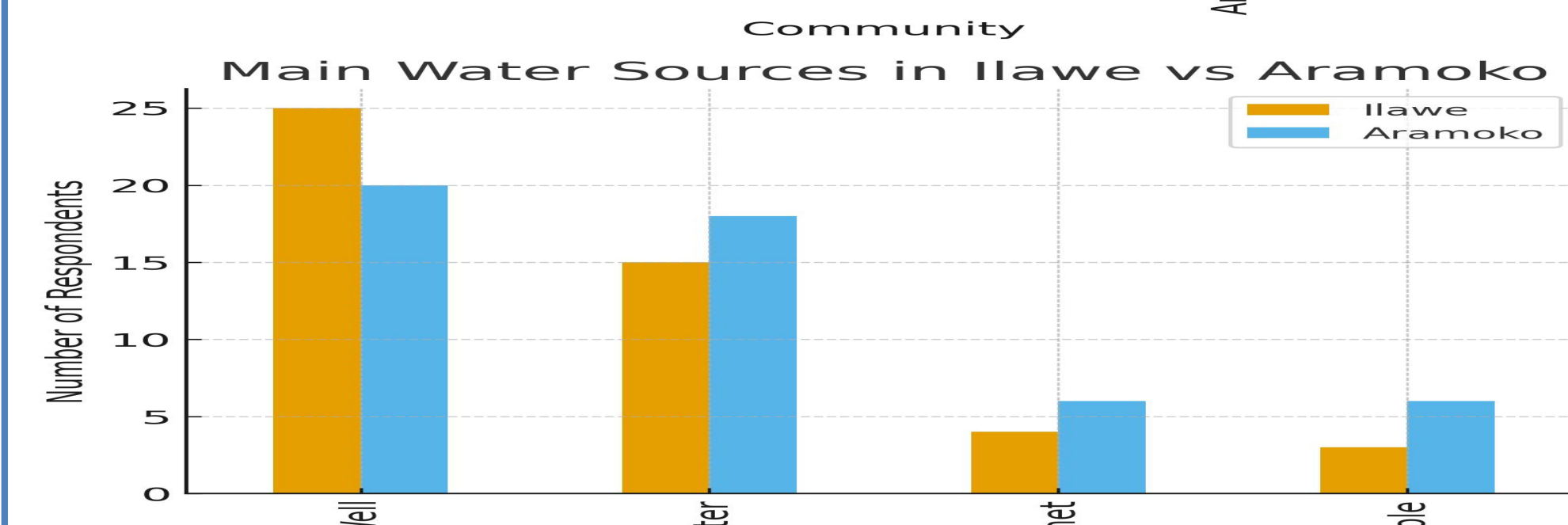
Community	18-35	35+
Ilawe	24	24
Aramoko	23	27

Gender Distribution of Respondents



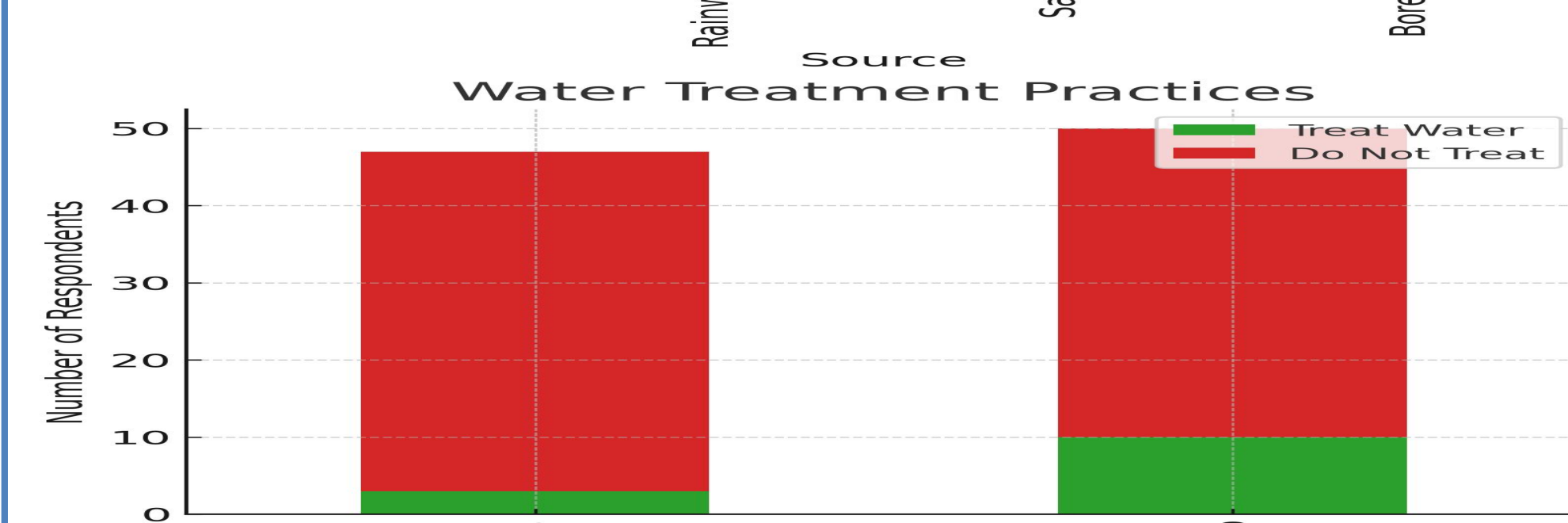
Community	Male	Female
Ilawe	22	26
Aramoko	30	20

Main Water Sources in Ilawe vs Aramoko



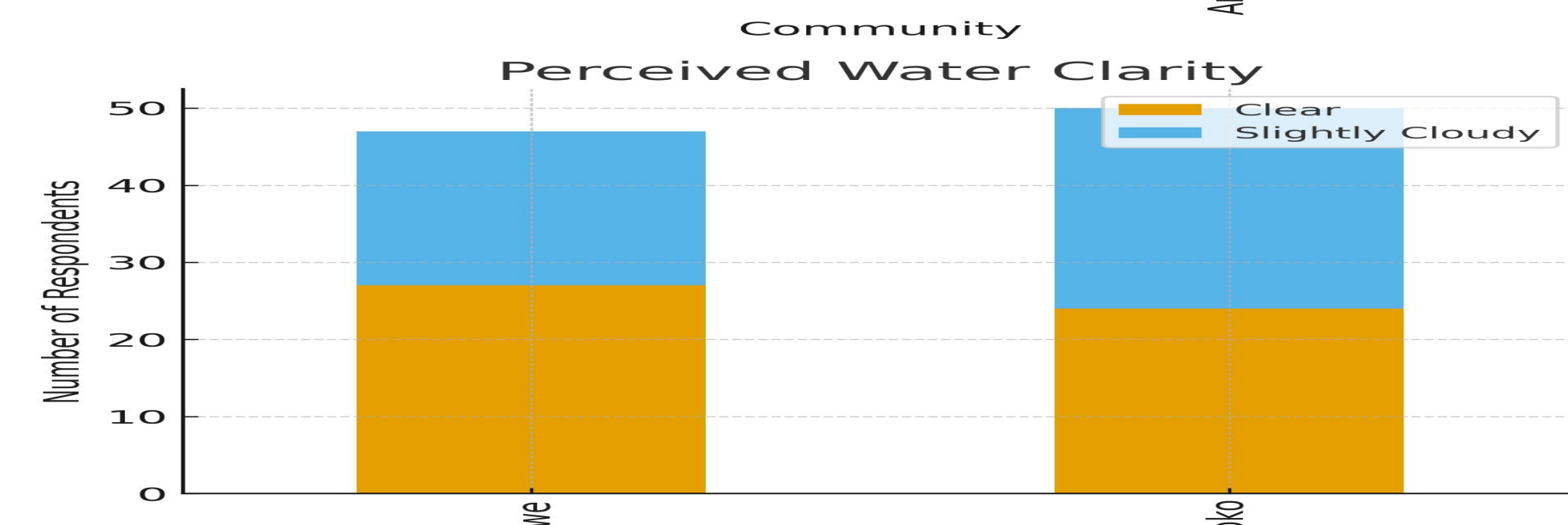
Community	Well	Rainwater
Ilawe	25	15
Aramoko	4	6

Water Treatment Practices



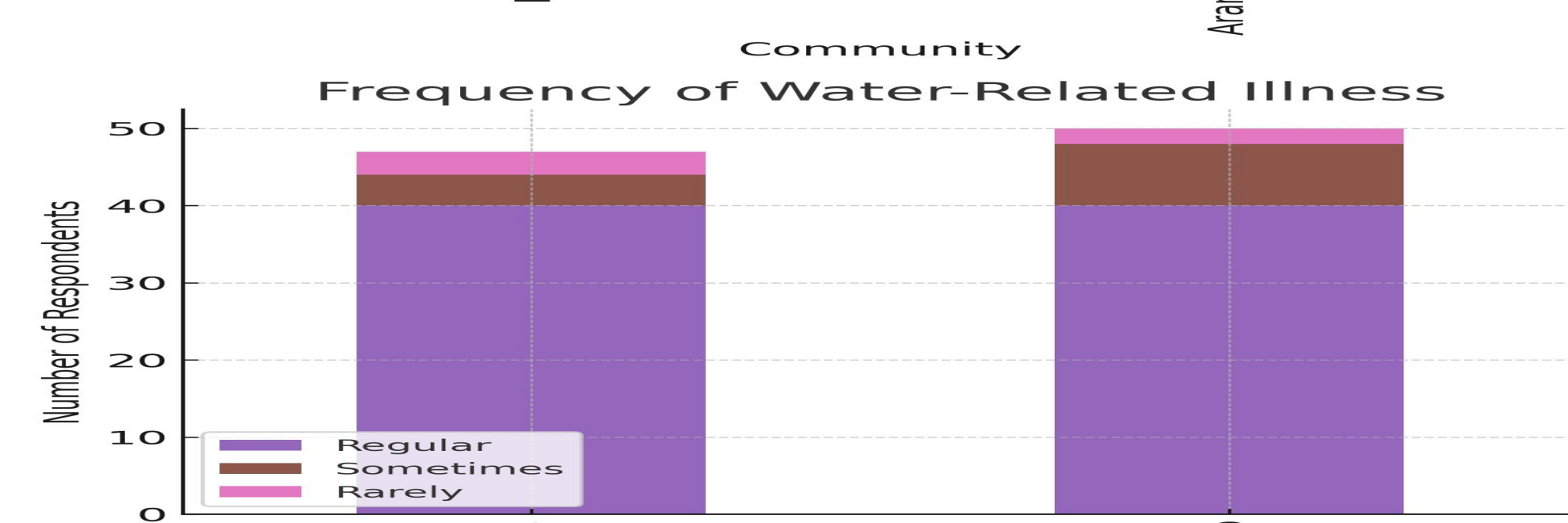
Community	Treat Water	Do Not Treat
Ilawe	2	48
Aramoko	10	40

Perceived Water Clarity



Community	Clear	Slightly Cloudy
Ilawe	28	20
Aramoko	23	27

Frequency of Water-Related Illness



Community	Regular	Sometimes	Rarely
Ilawe	40	5	5
Aramoko	40	5	5

Discussion of Figures and Table

Figures 1–6 and the summary Table 1 collectively illustrate the perceptual and behavioral dimensions of water quality in rocky-hill settlements. Figure 1 confirms that the study captures diverse age categories, while Figure 2 shows gender inclusivity, both enhancing representativeness. Figure 3 identifies Ilawe and Aramoko as relying on different water sources, with surface water dominating in Ilawe and boreholes more common in Aramoko, a difference reflected in the table as well. Figure 4 demonstrates that most households equate water clarity with safety, an assumption reinforced in the table where perceived quality diverges sharply from reported illness cases. Figure 5 shows minimal adoption of treatment practices, with the table underscoring a mismatch between awareness and action. Figure 6 records high frequency of water-related illnesses, supporting the evidence in the table that health challenges persist despite perceived adequacy of water sources. Together, the figures and table highlight the persistent gap between perception and reality, revealing how reliance on visual cues, inadequate treatment practices, and infrastructural inequalities exacerbate vulnerabilities to waterborne diseases. WHAT LOOKS SAFE MAY NOT BE SAFE — INVISIBLE CONTAMINANTS DEMAND CHEMICAL AND COMMUNITY ACTION.

Pictures of Rocky Hill Settlements of Illawe and Aramoko Ekiti Nigeria

Pictures of Their Major Sources of Water: Well, Rain etc...

Methods & Results

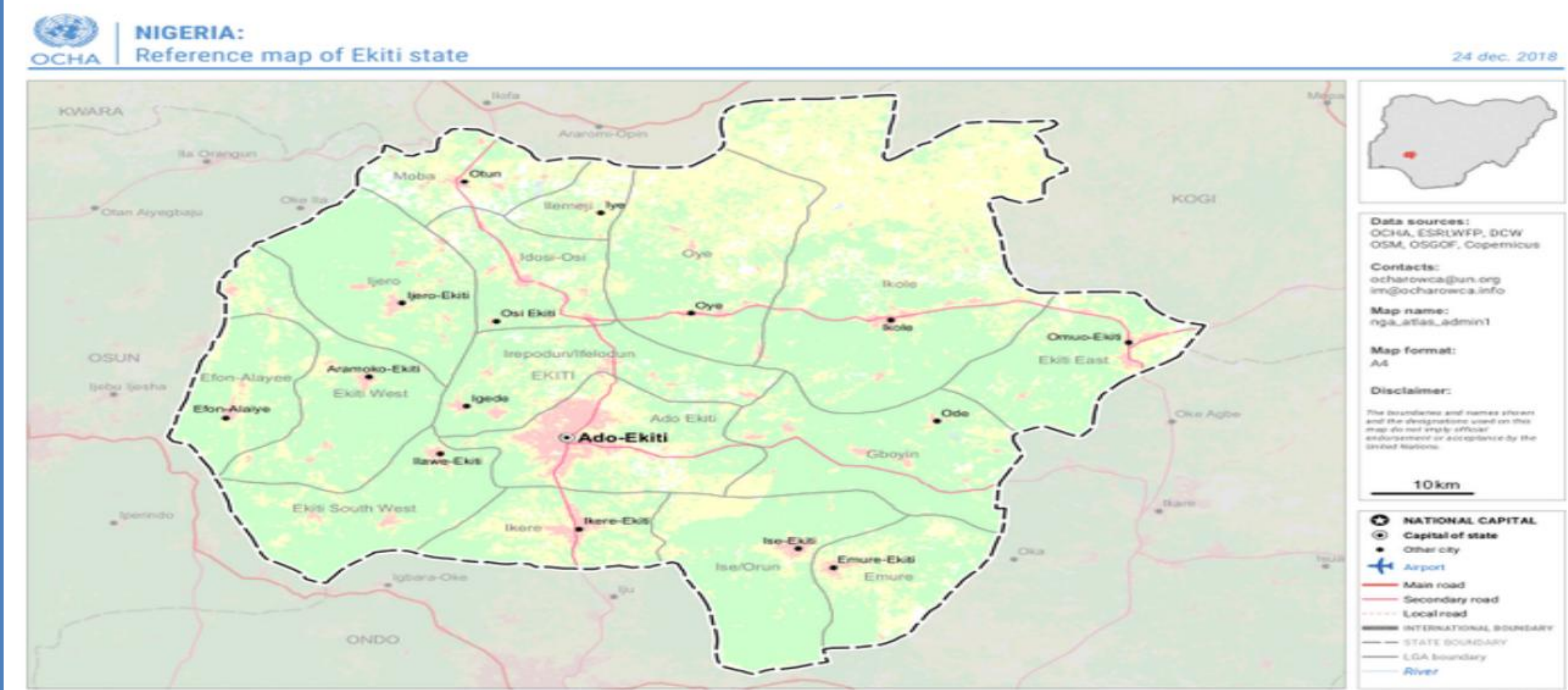
• Household surveys (n=200) and qualitative interviews across Ilawe-Ekiti and Aramoko

• Quantitative data on demographics, water access, perceptions, and illness frequency.

• Analysis of perception vs. reported illness to identify gaps.

• Mixed-method triangulation to integrate narratives and statistical patterns.

Fig 1: Map of Ekiti State, Nigeria Showing Location of Ilawe-Ekiti and Aramoko-Ekiti



This study was conducted in Ilawe-Ekiti and Aramoko-Ekiti, two rocky-hill settlements located in Ekiti State, Southwestern Nigeria. Both communities lie within the Nigerian Precambrian Basement Complex, a region dominated by granite formations, undulating terrain, and shallow weathered aquifers (Akinola, 2017). The granite-rich lithology of the area has been associated with the leaching of trace elements such as fluoride, iron, and manganese into groundwater and surface runoff (Oladipo & Ajayi, 2019). These towns were selected for their unique hydrogeological context, dependence on informal water sources, and history of waterborne illness complaints from residents.

Table 1. Summary Table of Perceived vs. Actual Water Risks in Rocky-Hill Settlements		
Community Perception	Observed Reality	Implication
Clear water is safe	High microbial and chemical contamination	Misplaced trust in appearance of water
Boiling is enough	Boiling reduces microbes but not heavy metals	Incomplete protection
Illness is 'normal' and seasonal	Waterborne diseases are persistent and preventable	Normalization of health risks
Institutions cannot be trusted	Limited interventions and weak monitoring confirm distrust	Policy gap and justice issue
Rainwater is safest	Acidic rainfall and storage contamination observed	False sense of security