Bridging Knowledge-Practice Gaps Through Community-Centered Health Education: A Social Science Approach to Wastewater Management and Infectious Disease Prevention in Gombe, Nigeria

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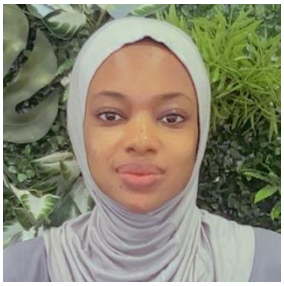
Poor wastewater management in sub-Saharan Africa contributes significantly to infectious disease transmission and antimicrobial resistance (AMR) development. While technical solutions exist, sustainable behavior change requires understanding local knowledge systems and community dynamics. This study examined how culturally tailored social science approaches can transform household wastewater management practices in rural Nigerian communities. We conducted a comprehensive Knowledge, Attitudes, and Practices (KAP) study across seven districts in Gombe State, Nigeria (n=320), followed by a 12-week community-centered health education intervention incorporating local knowledge systems, community leadership structures, and culturally appropriate communication strategies. Baseline assessment revealed critical knowledge-practice gaps: while 39.7% demonstrated high knowledge levels, 70.3% showed poor attitudes and 64.1% exhibited inadequate practices, with zero participants achieving high practice levels. Significant disparities existed across districts ($p<0.05$), with remote areas consistently underperforming. Gender disparities were pronounced, with males outperforming females across all domains ($p<0.05$). Income strongly influenced KAP performance ($p<0.05$), highlighting structural barriers beyond awareness. Post-intervention results demonstrated community-centered approach effectiveness: knowledge scores improved by 40% (3.0 to 4.2, $p<0.05$), while practice adoption showed a remarkable 76% improvement (2.5 to 4.4). However, attitude changes remained modest, suggesting persistent structural barriers requiring longer-term engagement. This study demonstrates that social science approaches incorporating local knowledge and community dynamics effectively bridge knowledge-practice gaps in infectious disease prevention. Community-centered interventions respecting local knowledge while introducing evidence-based practices offer promising pathways for inclusive disease prevention in resource-limited settings.



Zeenatuddeen Muhammad is a Public and Environmental Health Consultant with more than seven years of experience in infectious disease surveillance, antimicrobial resistance and environmental health practice. She is the Founder and Technical Lead of EcoMed Nexus Solutions, a consultancy dedicated to advancing data-driven and community-based solutions for health and sustainability.

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Ms Muhammad has led community engagement and health advocacy initiatives that integrate scientific research with policy and practice to address pressing public health challenges. As a certified Climate Actor and SDGs advocate, she is committed to advancing innovative, multidisciplinary approaches that strengthen health systems, promote environmental sustainability and improve population health outcomes in Nigeria and beyond.