African Population Geography
(Geography/Social/Demography)

Urban Slum Environmental Health Dynamics: An Epidemiological Intervention Study in Senegal

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Abstract

Urban slums in Senegal are characterized by high levels of environmental pollution, leading to a prevalence of environmentally-linked diseases such as respiratory infections and gastrointestinal illnesses. A mixed-methods approach including quantitative surveys, qualitative interviews, and geospatial analysis was employed. The study utilised a logistic regression model to assess the impact of interventions on disease prevalence. The intervention led to a reduction in respiratory infections by 15% (95% CI: -20%, -10%) among participants compared to controls, with no significant change observed for gastrointestinal illnesses. Despite the positive trend towards reduced respiratory infections, further research is needed to assess long-term health impacts and broader disease prevalence across different slum areas in Senegal. To enhance intervention efficacy, a multi-sectoral approach involving local government, non-governmental organizations, and community participation should be implemented. The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Urbanization, Sub-Saharan Africa, Community-Based Intervention, Public Health Policy, Environmental Epidemiology, Geographic Information Systems (GIS), Spatial Analysis*

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