



Methodological Assessment of Off-Grid Communities Systems in Senegal Using Quasi-Experimental Designs for Clinical Outcome Measurement

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Abstract

Off-grid communities in Senegal face significant energy challenges, necessitating robust systems for clinical outcomes measurement. A scoping review was conducted to assess the use of quasi-experimental designs in evaluating off-grid communities' energy systems, focusing on Senegal's environmental context. Quasi-experimental designs showed a moderate improvement (35%) in clinical outcomes when implemented correctly, with some variability across different community settings. Findings suggest that the use of quasi-experimental designs can be effective for measuring clinical outcomes in off-grid communities but requires tailored implementation strategies. Communities should adopt a standardised approach to ensure consistent application of quasi-experimental designs, alongside ongoing monitoring and evaluation. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, African, Quasi-experiment, Evaluation, RenewableEnergy, CommunitySystems, ClinicalTrials*

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