



Biodegradable Medical Packaging in Kenyan Hospitals: An Environmental Impact Assessment Over One Year

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Abstract

Biodegradable medical packaging has been proposed as a solution to reduce healthcare waste in hospitals, particularly in resource-limited settings such as Kenya. A mixed-methods approach was employed, including baseline surveys to establish current waste management practices, followed by a case study at three randomly selected hospitals. Data were collected on waste volume before and after the introduction of biodegradable packaging. Significantly reduced ($p < 0.05$) healthcare waste volumes were observed in two out of three hospitals where biodegradable packages were used, with an average reduction rate of 28% over one year. Biodegradable medical packaging showed promise in reducing hospital waste but required further optimization to achieve consistent and significant reductions across all settings. Further research should focus on optimising the design of biodegradable packages for different healthcare environments, particularly those with high volumes of non-biodegradable waste. Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \text{beta } 0 + \beta^{-} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Biodegradable Materials, Healthcare Waste Management, Kenyan Hospitals, Sustainable Practices, Case Study, Quantitative Analysis, Qualitative Research*

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