



# Feedback Loops in Personalized Medicine Programmes Across South African Hospitals: A Longitudinal Study

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## Abstract

This longitudinal study examines the implementation and feedback loops of personalized medicine programmes in South African hospitals over a decade. Data was collected through semi-structured interviews with clinicians and administrative staff, supplemented by secondary data from hospital records. Analysis employed thematic content analysis. Feedback loops revealed a significant improvement in patient outcomes ( $p < 0.05$ ) following the introduction of personalized medicine programmes, although variability existed across hospitals due to local context factors. Personalized medicine programmes have shown promise in enhancing clinical care but require tailored implementation strategies considering regional healthcare resources and infrastructure. Hospitals should incorporate continuous feedback mechanisms to optimise programme effectiveness, while policymakers must support the development of a supportive regulatory environment for personalized medicine initiatives. personalized medicine, hospital settings, longitudinal study, South Africa Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Geographical, African, Implementation Science, Feedback Loops, Personalized Medicine, Hospital Systems, Quality Improvement*

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