Artificial Intelligence Integration in Healthcare Analytics for Diabetes Management in South Africa: A Mixed-Methods Study

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Abstract

This study explores the integration of artificial intelligence (AI) in healthcare analytics for diabetes management in South Africa. A mixed-methods approach was adopted, combining quantitative data analysis and qualitative interviews to assess AI's impact on diabetes management. AI algorithms demonstrated an average accuracy of 95% in predicting diabetic complications compared to the baseline method (70%), with a confidence interval of ±2.5%. This represents a significant improvement. The study concludes that AI integration significantly enhances healthcare analytics for diabetes management, leading to better patient outcomes and reduced complication rates. Healthcare providers are recommended to adopt AI technologies in their analytics processes to improve diabetes care. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, AI, Analytics, Diabetes, Qualitative, Quantitative, Evaluation*

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