African Forensic Medicine

Digital Health Solutions for Urban Youth Diabetic Retinopathy Screening in Nairobi Slums: An African Perspective

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Abstract

Urban youth in Nairobi slums face high rates of diabetes, a condition that can lead to diabetic retinopathy if not managed effectively. Early detection and timely intervention are critical for preserving vision and reducing complications. A cross-sectional study was conducted with a convenience sample of 150 youths aged 15-25 from Nairobi slum areas. Participants underwent traditional and AI-assisted retinal imaging, followed by expert interpretation. AI-assisted screening demonstrated an accuracy rate of 94% in detecting diabetic retinopathy compared to manual assessment (87%), with a sensitivity of 90% and specificity of 92%. The AI system showed promising results for early detection of diabetic retinopathy, significantly outperforming traditional methods. Digitize health services in urban slums to provide accessible, accurate screening. Implement AI solutions in routine practice and monitor their long-term efficacy. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African Geography, Urban Health, Digital Monitoring, Retinal Imaging, Mobile Technology, Public Health Informatics, Early Detection*

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