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A Data Descriptor for the Comparative Diagnostic Accuracy of Clinical Algorithms and a Point-of-Care Haematology Analyser for Neonatal Sickle Cell Disease in Ibadan, Nigeria

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Abstract

Sickle cell disease is a major public health concern in Nigeria, contributing to high neonatal mortality. Early diagnosis is critical for improving outcomes but is often impeded by limited access to complex laboratory infrastructure in resource-constrained settings. This highlights the need to evaluate simpler, alternative diagnostic approaches. This data descriptor presents a curated dataset to facilitate the comparative analysis of the diagnostic accuracy of clinical screening algorithms versus a point-of-care haematology analyser for neonatal sickle cell disease in Ibadan, Nigeria. The dataset was generated from a cross-sectional study of neonates. It includes anonymised demographic details, clinical parameters for algorithm-based assessment (encompassing family history and physical signs), results from a handheld haematology analyser (SickleSCAN®), and confirmatory high-performance liquid chromatography (HPLC) results serving as the diagnostic reference standard. Data were cleaned and structured for analytical use. The dataset comprises complete records for 450 neonates. Preliminary analysis indicates the point-of-care analyser demonstrated higher sensitivity (92%) compared to the evaluated clinical algorithms (78%) when benchmarked against HPLC. The specificity for both methods exceeded 95%. This dataset provides a resource for validating and comparing diagnostic pathways for neonatal sickle cell disease in a real-world, resource-constrained African setting. It highlights the differential performance of point-of-care technology versus clinical assessment. Researchers are encouraged to use this dataset for further diagnostic meta-analyses, health economic modelling, and to inform evidence-based national screening guideline development. Data access is managed via a controlled repository. Sickle cell disease, neonatal screening, point-of-care testing, diagnostic accuracy, clinical algorithms, Nigeria, haematology, public health data This dataset was contributed by clinical researchers at the University of Ibadan and affiliated teaching hospitals. It was curated by the study team for reuse and secondary analysis.

Keywords: *Neonatal screening, Point-of-care testing, Sickle cell disease, Diagnostic accuracy, Sub-Saharan Africa, Haematology analyser, Clinical algorithms*

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