

ABCD 2025 winning posters

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BEST POSTER BY A JUNIOR DOCTOR

The capacity of healthcare facilities to diagnose diabetes and hypertension in sub-Saharan Africa: a systematic review and meta-analysis

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Background: Cardiovascular disease (CVD) is the leading cause of non-communicable disease deaths globally, with sub-Saharan Africa bearing a disproportionate burden.¹ Limited diagnostic capacity for hypertension and diabetes—two major CVD risk factors—undermines efforts to address this epidemic. We systematically reviewed the availability of basic diagnostic tools in health facilities across sub-Saharan Africa.

Methods: We searched PubMed and Embase (January 2014–September 2024) for observational studies reporting availability of functional sphygmomanometers and glucometers in sub-Saharan African health facilities. Two reviewers independently screened studies and extracted data. Random-effects meta-analysis estimated pooled prevalence of functional devices. Study quality was assessed using the Joanna Briggs Institute tool. PROSPERO: CRD42024617252.

Results: Of 4,423 articles, 35 studies met inclusion criteria, representing 12 countries and 15,469 facilities. Pooled prevalence of functional sphygmomanometers was 88% (95% CI 83–93%), while glucometer availability was markedly lower at 58% (95% CI 45–71%). Heterogeneity was substantial ($I^2 > 98\%$), reflecting genuine variability across settings. Overall, 94% of studies were moderate-to-high quality. Sensitivity analyses demonstrated robust findings. Glucometer availability was particularly low in rural and lower-tier facilities.

Interpretation: While hypertension diagnostic tools are widely available, more than 40% of facilities lack functional glucometers, representing a critical barrier to diabetes detection and CVD risk management. These findings provide the first comprehensive regional baseline for diagnostic capacity and highlight urgent need for targeted investment in diabetes diagnostic infrastructure, sustainable supply chains and workforce development to curb the escalating CVD burden in sub-Saharan Africa.

Reference

1. Roser M, Ritchie H, Spooner F. Burden of Disease. Our World Data 2024; published online Feb 29. <https://ourworldindata.org/burden-of-disease>

JOINT BEST POSTER

Gastroparesis in recurrent diabetic ketoacidosis: diagnostic gap and the role of hybrid closed-loop therapy

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Background and Aims: Gastroparesis remains an underdiagnosed risk factor for recurrent diabetic ketoacidosis (DKA) in patients with diabetes mellitus. In clinical practice, gastroparesis is rarely detected in the acute episodes, as its symptoms often overlap with the clinical presentation of DKA, while specific assessments are not routinely performed. This study aimed to determine the prevalence of gastroparesis, to quantify the diagnostic gap among patients with two or more DKA episodes in 2017, evaluate 7-year survival, and identify predictors of mortality in this high-risk population.

Material and Methods: A retrospective cohort study was conducted among 149 adult patients with two or more episodes of DKA in 2017 at NHS Greater Glasgow and Clyde. Gastroparesis status was defined as confirmed (based on gastric emptying scintigraphy, food residue on esophagogastroduodenoscopy, or both), excluded or not assessed. Statistical analysis was performed using the χ^2 test, Mann–Whitney U test, Kruskal–Wallis test, and multivariate logistic regression ($p < 0.05$).

Results: Gastroparesis was confirmed in 31 of 149 patients (20.8%). Only 44 patients (29.5%) underwent diagnostic evaluation, with a detection rate of 70.5% (31/44) among those examined. In contrast, 105 patients (70.5%) were not assessed for gastroparesis, indicating a significant diagnostic gap. Assessment rates for gastroparesis were no better in patients with six or more episodes of DKA in 2017: 71.4% (10 out of 14) had never been examined for gastroparesis. During the 7-year follow-up, 13 of 31 patients with confirmed gastroparesis died. None of those who died had access to an insulin pump or a hybrid closed-loop (HCL) system. Among survivors with confirmed gastroparesis, 4 out of 18 (22.2%) used HCL (insulin pumps alone were not used). Among surviving patients with confirmed gastroparesis ($n = 18$), a significant difference was found in the frequency of hospitalisations in the most recent 12 months according to the type of insulin therapy used. In the group using HCL, the median was 0 hospitalisations (mean 0.5 ± 1.0), while in the MDI group it was 3 (mean 3.1 ± 2.6), corresponding to a greater than six-fold difference on average. This difference was statistically significant according to the Kruskal–Wallis test ($\chi^2 = 4.44$; $p = 0.035$; $\epsilon^2 = 0.261$) and remained significant in Dunn's post hoc analysis with Bonferroni correction ($p = 0.035$).

Conclusions: Only one third of patients received appropriate diagnostic evaluation for gastroparesis. The diagnosis was confirmed in more than 70%, which suggests an underestimation of this complication in clinical practice. In addition, among patients with confirmed gastroparesis, the use of hybrid closed-loop (HCL) systems was associated with a lower frequency of hospitalisations, while none of the deceased had access to advanced insulin therapy. Expanding access to HCL systems may be crucial for improving the prognosis in this high-risk population.

Long-term survival following diabetic ketoacidosis: a retrospective cohort study

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Background and Aims: Diabetic ketoacidosis (DKA) remains one of the most serious, life-threatening diabetic emergencies. A subgroup of patients with recurrent DKA (two or more episodes in a 12-month period) is associated with significantly increased risk of long-term mortality. The aim of the study was to analyse 7-year survival after recurrent DKA and to identify clinical factors associated with long-term mortality.

Materials and Methods: A retrospective cohort study was conducted. The analysis included 149 patients with two or more episodes of DKA in 2017 within NHS Greater Glasgow and Clyde. This cohort was identified using discharge codes and laboratory data. Six patients were excluded due to relocation to another health board. Statistical analyses were performed using the χ^2 test, Mann-Whitney U test, linear and multiple linear regression.

Results: During the 7-year follow-up period, 37.6% (n = 56) of patients died, of whom 17.9% died within the first year after the recurrent DKA episode. Older age at the time of DKA was a predictor of increased mortality ($\beta = -0.050$, 95% CI -0.084 to -0.015, p = 0.005). No patient aged over 65 years in 2017 survived the follow-up period (n=14). No age group was spared mortality: 4/39 aged 16-25 years and 10/34 aged 26-35 died. The insulin therapy regimen was associated with mortality: 81.3% (26/32) people on BD mix died, 27.8% (30/108) in the MDI group died but 0% (0/9) people on pumps or HCL died. Access to the most advanced diabetes technologies (pumps and HCL) was poor in this group despite evidence of engagement: 70% of survivors had been seen at diabetic clinic in the previous 15 months (65/93).

Conclusion: Age at the time of DKA was an independent predictor of reduced survival. The highest mortality rate was observed during the first year, underscoring the need for intensive follow-up during this period. None of the nine patients who used an insulin pump or a hybrid closed-loop system died, while mortality was dramatically higher in the BD mix group. Limited access to advanced technologies may be one of the key factors contributing to the high mortality rate in the group of patients with recurrent DKA. Expanding access to such technologies is a potentially effective way to improve long-term clinical outcomes in this high-risk group.

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