Retrospective study of diphtheria outbreak, Kano state, Nigeria 2023-2024

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Context

Kano State, Nigeria, has been the epicentre of a large-scale, ongoing diphtheria outbreak since January 2023, with over 18,000 cases and 850 deaths so far reported. MSF-WaCA supported clinical care in diphtheria treatment centres (DTCs) and, in response to a rapid upsurge in cases that overwhelmed bed capacity, introduced a novel home-based care (HBC) strategy to manage mild cases.

Methods

We conducted a population-based retrospective mortality and morbidity survey (n=4,500) and a matched retrospective cohort study comparing outcomes among patients managed in HBC (n=367) versus DTC (n=311). Primary outcomes included attack rate (AR), case fatality ratio (CFR), long-term sequelae, secondary attack rate (SAR), and acceptability of care. The recall period spanned from January 2023 to October 2024.

Results

The crude AR was 1.1% (95% CI 0.81–1.41), peaking at 2.1% in children aged 6–10 years. Diphtheria accounted for 7.3% of all deaths and 9.8% among children under five. CFR among confirmed cases was 9.0%, with significantly higher mortality in children under five (Mortality Rate Ratio (MRR) 8.6, 95% CI 6.0–12.2) and unvaccinated individuals (MRR 2.3, 95% CI 1.5–3.5). Delayed care-seeking (>3 days) increased mortality risk 17-fold, and mortality was 40% lower among those who sought formal healthcare.

HBC performed comparably to DTC care, with no evidence that HBC patients had higher CFR, increased risk of sequelae, or SAR compared to DTC patients. Both models of care were highly acceptable.

Conclusion

This was a high-impact outbreak with high AR and CFR, particularly among young children. There was substantial under-detection of cases, with a large proportion of cases never reaching formal health structures and orthodox treatment. Any, and early, care-seeking reduced risk of death. The HBC model proved safe, effective, and well-accepted for mild diphtheria cases and offers a scalable alternative in resource-constrained outbreak settings.

A diphtheria outbreak in Kano, Nigeria, caused high mortality. Early care-seeking reduced deaths, while home-based care for mild cases reduced pressure on resources and was effective.