



Morbidity patterns and factors associated with mortality in the Inpatient Therapeutic Feeding Centre in Abs General Hospital, Yemen: an unmatched case-control study

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Introduction

Inpatient Therapeutic Feeding Centre (ITFC) in Abs General Hospital, Yemen, provides nutrition treatment and management of medical complications to children affected by the humanitarian crisis in Abs and surrounding areas. In the past 2 years, the monthly mortality rate for children younger than 14 years averaged at 2.5–5% during non-peak months (Médecins Sans Frontières [MSF] indicator threshold for ITFC is 5%), but it increased to 7% during the peak months. We aimed to describe ITFC patients' demographic, anthropometric, and clinical variables, and assess their association with inpatient mortality.

Methods

We conducted an unmatched case-control study with patients aged <14 years who attended ITFC between January and December 2022. Cases were patients for whom the ITFC exit was recorded as “death” (n=106), and controls were those with the exit recorded as “discharged”, selected via systematic random sampling (n=218). Descriptive statistics were performed for all variables. We assessed associations with mortality by calculating adjusted odds ratios (aORs) via multivariable logistic regression, controlling for factors significant in the univariable analysis.

Ethics

This study fulfilled the exemption criteria set by the MSF Ethics Review Board (ERB) for a posteriori analyses of routinely collected clinical data and thus did not require MSF ERB review. It was conducted with permission from Cristian Casademont, the Medical Director, Operational Centre Barcelona MSF.

Results

About 77% of patients were aged ≥6 months (71/106 cases and 178/218 controls). Gender distribution was even in both groups. The median mid-upper arm circumference was 88 mm in patients aged <6 months and 104 mm in those aged ≥6 months; 89% of the patients had weight-for-height Z score of <−3. The most common diagnoses at death were pneumonia (38%), gastroenteritis (24%), and sepsis (23%). Patients who lived at the three districts to the north of Abs had significantly higher odds of death (crude ORs 3.47, 3.64, and 6.07) than patients from Abs districts. Having shock (aOR 29.2, 95% CI 6.61–151), hypoglycaemia (9.33, 2.98–32.2), and sepsis (7.52, 2.60–24.1) were strongly associated with inpatient mortality. Other significant risk factors for mortality included age (aOR 1.07, 1.03–1.11), high paediatric early warning score (1.14, 1.01–1.30), being given intravenous fluid without documented shock (3.64, 1.20–12.6), respiratory distress (4.36, 1.47–13.8), congenital heart disease (5.44, 1.42–22.5), and hepatomegaly (6.78, 1.45–36.0). Several medical complications were found exclusively among deceased patients (e.g., electrolyte disturbance, hypothermia, and coma). Among those who received rehydration treatment (n=280), plan B with ReSoMal was the least used plan (15%).

Conclusion

We identified important demographic and clinical factors associated with ITFC mortality. Geographical disparity suggests a need for healthcare gap and access evaluation to the affected regions. Prompt recognition of shock, hypoglycaemia, sepsis, and other significant clinical factors would enable early intervention and closer patient monitoring. Lastly, this study highlights the importance of adherence to fluid management guideline.

Conflicts of interest

All authors declare no competing interests.