

Mapping Inequities in Surgical Access: Global Variation in Timely Access to Primary Cleft Repair within Populations Served by an International NGO

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Purpose

- Timely cleft surgery is critical for optimal aesthetic and speech outcomes following primary repair, with established benchmarks for lip repair <12 months and palate repair <18 months.
- Access to cleft surgery varies globally, with low- and middle-income countries (LMICs) facing disproportionate barriers to timely care access.
- Despite international non-governmental organization (NGO) efforts to increase timely cleft lip and palate (CLP) repair, adherence to surgical timing guidelines remains inconsistent across regions.
- This study evaluates global adherence to optimal timelines and identifies regions where delays limit surgical access.

Methods

- A retrospective review of Operation Smile program data from 2015–2023 was conducted.
- Age at primary CLP repair was analyzed across 23 countries.
- Patients were classified as timely or delayed based on established benchmarks.
- Critical country-level access gaps were defined as cohorts in which ≤25% of patients received surgery within recommended timeframes.

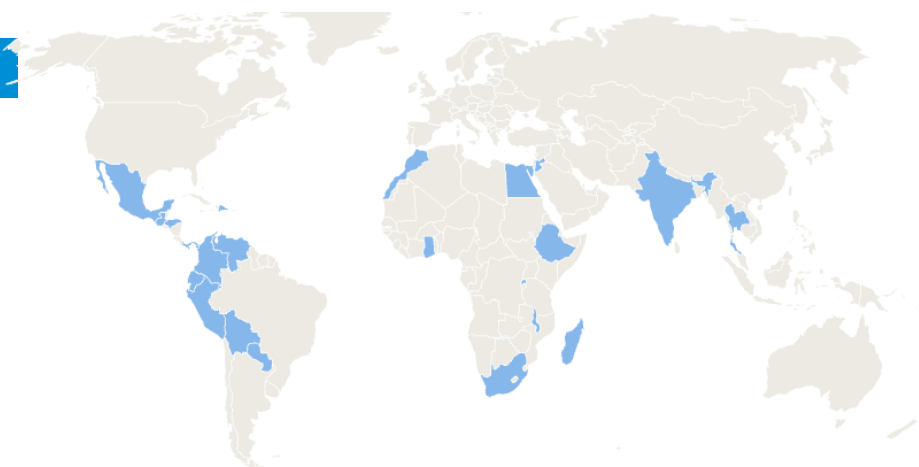


Figure 1: Country Representation

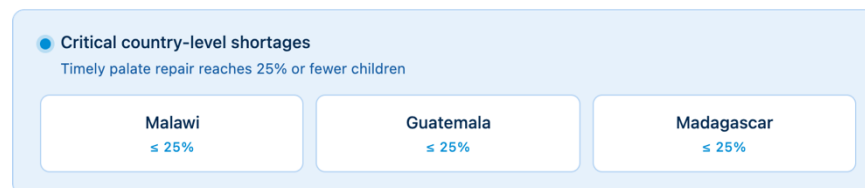


Figure 2: Countries Displaying Critical Shortage in Timely Cleft Care Access

Results

- 2,000 CLP patients met inclusion criteria.
- CL repair patients:** median age 6.5 months; 71.2% received timely surgery.
- CP repair patients:** median age 18.0 months; only 46.1% received timely surgery.

Results Continued

- Timely lip repair varied significantly by region (MENA: 83%; South Asia: 53%, $p < 0.001$) and income group (UMICs: 74%; LICs: 56%, $p = 0.008$).
- Timely palate repair showed significant regional variation (MENA: 62% vs. LAC 42%, $p < 0.001$). No significant differences were observed by income group ($p = 0.052$).
- Critical country-level shortages** in timely palate repair (≤25%) were identified in **Malawi, Guatemala, and Madagascar**.

Conclusion

- While timely CL repair was achieved among the majority of Operation Smile patients, CP repair remains significantly delayed globally, with less than half of our cohort meeting recommended benchmarks.
- These findings identify high-risk regions and countries for targeted intervention, emphasizing the need for context-specific strategies to improve surgical timing and access.
- Addressing these disparities is essential to reduce preventable morbidity and improve long-term outcomes in cleft care worldwide.