Risk Factors for Severe Complications and Infections Among Children Who Received Traditional Bone-Setting in Ethiopia

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Purpose: In Ethiopia, orthopaedic services are limited, and many injured children undergo traditional bone-setting (TBS). TBS is associated with severe limb- and life-threatening complications. For children presenting to hospital after receiving TBS, we sought to identify risk factors for severe complications/infections, including missed compartment syndrome, Volkmann's ischemic contracture, complex regional pain syndrome, vascular injury, gangrene, chronic osteomyelitis, septic arthritis, and septicemia.

Methods: Over 15 months, we prospectively enrolled children at 8 Ethiopian hospitals who presented after receiving TBS. We used multivariable logistic regression to evaluate associations between severe complication/infection and 16 covariates: age, sex, household education level, religion, household size, poverty, rural/urban residence, geographic region, injury mechanism, injured body part, injury type, time since injury, health facility visits prior to TBS, TBS topical treatments, TBS immobilization, and parent/guardian preference for TBS.

Results: We enrolled 460 children (mean age 9.0 ± 4.0 years; 75% male) representing 5 Ethiopian regions and diverse demographic and socioeconomic backgrounds. Elbow injuries (194, 42.2%), and closed fractures/dislocations (364, 79.1%,) were most common. TBS treatments included topical inorganic (190, 41.3%) or organic material (82, 17.8%), and rigid (166, 36.1%) or soft immobilization (182, 39.6%). 97 children (21.1%) had severe complications/infections; 26 required amputations. Severe complication/infection odds were higher for children from rural communities (adjusted odds ratio [AOR] 6.52, 95% confidence interval [CI] 2.61- 16.30), with open fractures (AOR 6.03, 95% CI 1.79-20.28), isolated soft-tissue injuries (AOR 4.79, 95% CI 2.06-11.15), and health facility visit prior to TBS (AOR 3.82, 95% 1.61-9.04). Children from households with secondary school education or higher (AOR 0.17, 95% CI 0.04-0.79) and larger households (AOR 0.78, 95% CI 0.64-0.96) had lower odds.

Conclusion: Children from rural communities, with open fractures or isolated soft-tissue injuries, and who had first visited a formal health facility before TBS had the highest odds of severe complication/infection. These limb- and life-threatening complications may be prevented by training bone-setters, improving access to orthopaedic trauma care, and engaging in public awareness campaigns, especially in rural Ethiopia.