503 Trainee-led rural trauma teams impact clinical process and outcomes of neurological injuries: new insights from the motor cluster randomized trial

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Abstract:

Background Strengthening capacity for rural trauma education is critical for sustainability of competent trauma care systems.

Objective To examine the effect of rural trauma development course (RTTDC) training and coordination on clinical process and outcomes of motorcycle-attributable neurological injuries in low-income Uganda.

Methods Multi-center, two-armed parallel, multiperiod, cluster randomized motorcycle trauma outcome registry (MOTOR) trial. Six trauma centers were randomized to intervention (RTTDC plus standard care n=3) and control (standard care alone, n=3) in equal allocation, using permuted block sequence codes. Patients and outcome assessors were blinded. A motorcycle trauma outcome registry was executed in parallel in collaboration with community traffic police. Rural trauma care frontliners including traffic law enforcement professionals, surgery residents and medical trainees received the intervention. Prehospital and referral-discharge time intervals were primary outcomes whereas all cause 90-day mortality and morbidity of neurological injuries were secondary, all measured as final values. Mixed effects regression models and two-sample Wilcoxon rank-sum test were performed in Stata 15.0 to document differences in outcomes at 95% CI, regarding $p<.05$ as statistically significant. Pan African Clinical Trial Registry (PACTR202308851460352): Ethical approval from Uganda National Council for Science and Technology (Ref: SS 5082).

Results For the 1003 trial participants, both prehospital and referral-discharge intervals were shorter in the intervention group by 1.13hrs (95% CI: 0.96–1.39) and 1.39hrs (95% CI: 1.23–1.55), respectively ($p < .0001$). Of the 887 participants whose follow-up was complete, 85.5% (758) had a favourable outcome with Glasgow outcome scale of (4–5). The proportions of participants with favourable outcome were higher in the intervention group 90.8% (415/457) compared to controls 79.8% (343/430), $p < .0001$. The 90-day mortality was 9.2% (82/887). The mortality was lower in the intervention 5.2% (24/457) compared to the control group 13.5% (58/430), $p < .0001$.

Conclusions Empowering rural health professionals through capacity training and coordinated trauma teams improved clinical process effectiveness and outcomes of time-dependent neurological injuries. These results could inform the design of future trauma teams in similar vulnerable rural environments.

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