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A Cluster RCT educational intervention on management of snakebites in Sri Lankan primary hospitals

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Objective: Snakebite has been identified as a neglected tropical disease. In Sri Lanka, 44,000 cases are reported annually. Most patients present to primary rural hospitals where health care workers have little access to ongoing education. To evaluate the effect on treatment of snakebite following a brief educational intervention.

Methods: Design: Cluster randomized Control trial. Setting: 44 Primary health care inpatient facilities in Kurunegala distinct of NWP, Sri Lanka. Subjects: The primary hospitals health care workers and the snakebite patients presenting for treatment. Outcome and measures: The hospitals were randomized into intervention (n=24) and control group (n=20). The intervention hospitals received a brief educational program based on Sri Lankan Medical Association (SLMA) guidelines. Four outcomes were assessed; (I) Pre- and Post-test in the management of snakebites–training workshop as a part of intervention (II) Quality of the patients' medical record, which was assessed for 24 pre-determined points in control and intervention groups (III) Number and appropriateness of inter hospital transfers (IV) Quality of overall management as graded by a blinded expert. The data collected for the period of 12 months were organized and tabulated. Statistical Method: Wilcoxon Signed Rank test calculated for comparison between paired samples (I). For comparison between independent samples the Clustered Wilcoxon rank sum test (RGL method) performed (II). The ICC adjusted Chi-squared test performed to test the proportion of homogeneity between the treatment groups to compare the appropriateness of transfers (III) and the number of patients managed correctly at the primary care units (IV). Significance was adapted at $p<0.05$. Data were analyzed using R statistical software package version 3.2.5, through package aod and clusrank.

Results: 1021 cases in the intervention and 1165 cases in the control groups were assessed. Four hospitals in the intervention and 3 hospitals in the control groups did not have any snakebites so were excluded from the analysis. Post educational interventional program tests showed improved knowledge when compared with pretest [Median score 16 (IQR 10.25 -20) vs 23.5 (IQR 18.25-28), $p<0.0001$]. There were no differences between the two groups in case of documentation scores ($p=0.58$), appropriateness of transfers ($p=0.68$) and overall patient management ($p=0.5$).

Conclusion: The educational intervention improved knowledge of primary health care workers immediately after the workshop. But, there are no statistically significance difference between the treatment groups by the end of the study period. The overall patient management was >89% in both groups, suggest that the primary health care workers have already acquired the knowledge of effective management and have adequate inpatient facilities to manage the snakebites. But, there are still areas for continuous education and confidence building to improve them.