

Effect of a mobile-based intervention (Code Sama) on door-to-needle time in acute ischemic stroke patients: a quasi-experimental study

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Abstract

Introduction Door-to-needle (DTN) time is a critical performance metric in acute ischemic stroke management, as delays are directly associated with poorer clinical outcomes. This study evaluated the effect of a mobile-based software intervention (Code Sama) on reducing DTN time in the emergency department (ED).

Methods This quasi-experimental study employed a non-equivalent control group, pretest-posttest design, conducted at a comprehensive stroke center in Tabriz, Iran. Sixty emergency department nurses participated in implementing a mobile-based clinical decision support application. Patient data were collected through direct observation using a validated timing checklist. The control group comprised 60 acute ischemic stroke patients managed with routine care over an 8-week period. The intervention group included 60 patients treated after nurses received training on and began using the "Code Sama" application. The primary outcome, door-to-needle time, was measured by trained observers present around the clock who recorded timestamps at key care milestones. Data were analyzed using independent t-tests following confirmation of normality assumptions.

Results Patient groups were homogenous regarding baseline demographic and clinical characteristics, including age, sex, and NIHSS score ($p > 0.05$). No significant difference was found in mean DTN time between the control group's baseline (48.60 ± 2.52 min) and the intervention group's pretest (48.23 ± 2.40 min). Following the intervention, the mean DTN time in the intervention group decreased significantly to 42.96 ± 1.45 min. This reduction was statistically significant compared to its own pretest ($t(48) = 10.25, p < 0.001$) and to the control group's post-period ($t(47) = 10.58, p < 0.001$), with a very large effect size (Cohen's $d > 2.5$).

Conclusion Implementation of the "Code Sama" mobile-based intervention was associated with a significant reduction in door-to-needle time for acute ischemic stroke patients. These findings suggest this tool may serve as a