

## Thinking Lean in ICU: A Time Motion Study Quantifying ICU Nurses' Multitasking Time Allocation

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**Abstract :** Context: Intensive care unit (ICU) nurses often face pressure and constraints in their work, leading to the rationing of care when demands exceed available time and resources. Observations suggest that ICU nurses are frequently distracted from their core nursing roles by non-core tasks. This study aims to provide evidence on ICU nurses' multitasking activities and explore the association between nurses' personal and clinical characteristics and their time allocation. Research Aim: The aim of this study is to quantify the time spent by ICU nurses on multitasking activities and investigate the relationship between their personal and clinical characteristics and time allocation. Methodology: A self-observation form utilizing the "Diary" recording method was used to record the number of tasks performed by ICU nurses and the time allocated to each task category. Nurses also reported on the distractions encountered during their nursing activities. A convenience sample of 60 ICU nurses participated in the study, with each nurse observed for one nursing shift (6 hours), amounting to a total of 360 hours. The study was conducted in two ICUs within a university teaching hospital in Alexandria, Egypt. Findings: The results showed that ICU nurses completed 2,730 direct patient-related tasks and 1,037 indirect tasks during the 360-hour observation period. Nurses spent an average of 33.65 minutes on ventilator care-related tasks, 14.88 minutes on tube care-related tasks, and 10.77 minutes on inpatient care-related tasks. Additionally, nurses spent an average of 17.70 minutes on indirect care tasks per hour. The study identified correlations between nursing time and nurses' personal and clinical characteristics. Theoretical Importance: This study contributes to the existing research on ICU nurses' multitasking activities and their relationship with personal and clinical characteristics. The findings shed light on the significant time spent by ICU nurses on direct care for mechanically ventilated patients and the distractions that require attention from ICU managers. Data Collection: Data were collected using self-observation forms completed by participating ICU nurses. The forms recorded the number of tasks performed, the time allocated to each task category, and any distractions encountered during nursing activities. Analysis Procedures: The collected data were analyzed to quantify the time spent on different tasks by ICU nurses. Correlations were also examined between nursing time and nurses' personal and clinical characteristics. Question Addressed: This study addressed the question of how ICU nurses allocate their time across multitasking activities and whether there is an association between nurses' personal and clinical characteristics and time allocation. Conclusion: The findings of this study emphasize the need for a lean evaluation of ICU nurses' activities to identify and address potential gaps in patient care and distractions. Implementing lean techniques can improve efficiency, safety, clinical outcomes, and satisfaction for both patients and nurses, ultimately enhancing the quality of care and organizational performance in the ICU setting.

**Keywords :** motion study, ICU nurse, lean, nursing time, multitasking activities

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