

4th International Congress on Primary Health Care & 2nd Euro Nursing Congress

September 15–16 | Virtual Event

Teresa Hochstrasser

University of Applied Sciences
Austria



AI-Driven Semi-Passive Documentation for Enhanced Nursing Efficiency

Abstract:

Nursing documentation is essential for patient care, ensuring accurate communication and enhancing patient safety, but is often perceived as an administrative burden that reduces time for patient care. Traditional methods – such as handwritten notes or stationary computer entries – require nurses to leave the bedside, disrupting workflows and increasing the risk of information loss due to delayed, retrospective entries. The NUDOCU project addresses these challenges by developing a semi-passive documentation system that uses machine learning (ML) to predict care activities, enabling bedside documentation via smartphone. We analyzed 1,330,519 documentation entries from 39,514 patients (2021–2023) at an Austrian hospital (including timestamps, care activities, patient demographics, diagnoses, and room assignments). Using this dataset, a Light Gradient-Boosting Machine classification model was trained to predict the five most probable care activities, considering patient and nurse context as well as previously documented tasks. The model achieved 80.6% top-5 accuracy using stratified cross-validation. Predictions were integrated into a smartphone app that displays suggested care activities ranked by relevance. Nurses can confirm a suggestion or select another activity via a search function. Integrating ML-based predictions with smartphone-enabled bedside documentation shows potential to optimize nursing documentation. By reducing time spent on documentation, the system aims to alleviate the administrative burden on nurses, allowing more focus on direct patient care. A qualitative evaluation involving 23 nurses revealed good acceptance of the system, with many participants perceiving a reduction in documentation workload. Further studies should be conducted to evaluate the system's scalability and long-term effects in diverse clinical settings.

Biography

Teresa Hochstrasser, PhD candidate at Johannes Kepler University, is a research associate at the University of Applied Sciences Upper Austria. She holds a Bachelor's degree in Process Management and Business Intelligence and a Master's degree in Logistics Engineering Management. Since 2021, she has been involved in the benchmarking initiative "Leistungsvergleich-Medizin" (LeiVMed), which focuses on benchmarking in Austrian hospitals. She has presented her research at international conferences, including poster contributions at ISQua's International Conferences in 2023 and 2024. This research was funded by the Austrian Research Promotion Agency (FFG) as part of the project "Nursing Documentation (NUDOCU)" (Grant No. [FO999892173]).