Abstract

A Multidimensional Performance Management Framework Reduces Nurse Burnout and Increases Unit Efficiency: A Pre-Post Study

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Citation: Martellini E, Foschi E. "A Multidimensional Performance Management Framework Reduces Nurse Burnout and Increases Unit Efficiency: A Pre-Post Study" (2026) *International Journal of Health Supplements* 1(Suppl. 1):32-33. Supp. DOI: https://doi.org/10.82051/ijhs-2026-1

Introduction. The emerging challenges for the National Health Service (NHS) concern the economic sustainability of the system, the shortage of healthcare professionals, including nurses, and the need to maintain high standards of care. Often, organisations promote improvement projects aimed at increasing services, focusing primarily on increasing staff numbers and ignoring alternatives such as the positive influence of organisational and managerial actions on staff to improve outcomes within healthcare settings. This study aims to fill this gap by evaluating, with equal human resources, the effects of a multidimensional performance management (PMF) framework focused on employee well-being on the quality of care provided, operational efficiency, and the organisational well-being of nurses.

Methods. A pre-post study was conducted in surgical Unit at first-level hospital (as defined by the italian M.D. 70/2015). A PMF was developed, integrating Lean reorganisation of spaces and processes, digitalisation, training programme, adoption of a transformational leadership style and personalised work planning to promote work-life balance. All nurses working in the surgical unit during the study period were invited to participate and data were collected at three time points: baseline (T0: November 2023), immediately post-intervention (T1: November 2024), and at one-year follow-up (T2: November 2025). The primary outcomes, assessed according to validated scales, included job satisfaction (Job Satisfaction Scale, JSS), burnout (Burnout Assessment Tool, BAT), turnover intention (TI) and perceived workload (IWPS). The other outcomes taken into consideration were efficiency KPIs: (i) Day Hospital admissions, (ii) bed occupancy rate, (iii) bed turnover interval and quality of care KPIs: (i) number of adverse events, (ii) user satisfaction, monitored by data PREMS on Tuscany Region. Stata® 17.0 was used as software for statistical analysis, with statistical significance set at $p<0.05$. The data were anonymized and analyzed in aggregate form.

Results. Thirty-four nurses (90% female) were included in the study. Median age of subjects was 53.1 ± 6.73 years (range 40–65). The subjects have professional experience: <10 y (n=4), 10-20 y (n=9), 20-30 y (n=5), >30 y (n=16). Most participants held a diploma degree (60.0%), while 26.7% had a bachelor's degree and 13.3% a master's degree. The pre-post intervention analysis (T0-T1) showed a statistically significant improvement in all organisational well-being indicators: job satisfaction (JSS) increased

(p<0.001), while burnout levels (BAT) (p<0.001), turnover intention (TI) (p<0.001) and negative perception of workload (IWPS) (p<0.001) decreased. These improvements were sustained at the one-year follow-up (T2). Concomitantly, efficiency metrics improved, with Day Hospital admission (DHa) from 1800/y to 3593/y, an increase in bed occupancy rate (BOR) (>89%) and turnover interval (≈ 1 d.). This positive trend continued at T2, with DHa reaching 4101/year and bed occupancy rate 92%, all while maintaining excellent quality and safety indicators. The study also found a strong positive link between burnout levels and educational qualifications (p<0.05).

Discussion. This study provides evidence that a person-centered, data-driven PMF can simultaneously combat nurse burnout and drive significant gains in operational efficiency, without compromising care quality. The results show that, given the same human resources, investing in organizational and motivational elements appears to be an effective approach for healthcare system sustainability. This research suggests a significant link between increased training and burnout and highlighting the risk of 'over-qualification' or unfulfilled expectations, suggesting that organizations must actively engage and challenge highly educated staff to prevent disengagement. Although these results are promising, as they were analysed in a single surgical unit with a small sample size (n=34), they require validation in larger multicentre studies and in different clinical contexts to confirm the generalisability of this PMF. However, sustained improvements over the course of a year suggest that investing in organisational culture and processes is a powerful lever for the sustainability of the healthcare system, challenging the prevailing focus on simply increasing the number of human resources.

Keywords: Nursing Leadership, Burnout, Workforce Sustainability, Performance Management, Efficiency

Funding: This research received no external funding. **Conflict of Interest:** The authors declare no conflict of interest.