

Critical Review of "Effectiveness of an Integrated Platform-Based Intervention for Promoting Psychosocial Safety Climate and Mental Health in Nursing Staff: A Pragmatic Cluster Randomised Controlled Trial"

Kapil Pandya

Department of Pediatric Nursing, ANMTC Dungarpur, Rajasthan, India

Abstract- This article critically reviews the study conducted by Boß et al. (2025), which evaluates the effectiveness of Care4Care, a digital mental health intervention platform aimed at improving the psychosocial safety climate (PSC) and reducing psychological strain among nursing staff. While the study found a moderate reduction in perceived stress, the primary outcome—PSC—showed a small effect (Cohen's $d = 0.25$) with a 95% credible interval including zero (-0.32 to 4.44), indicating the result was not statistically significant. This review evaluates the methodology, key findings, platform engagement, and implementation implications of Care4Care, with recommendations for future research and policy.

This article critically reviews the study conducted by Boß et al. (2025), which evaluates the effectiveness of Care4Care, a digital mental health intervention platform designed to enhance the psychosocial safety climate (PSC) and reduce psychological strain among nursing staff. Mental health concerns in the nursing workforce have escalated in recent years due to occupational stressors such as emotional exhaustion, workload burden, and lack of systemic support. The reviewed study, employing a pragmatic cluster randomised controlled trial, demonstrates promising outcomes in stress reduction but provides inconclusive results regarding PSC improvements. This review analyzes the study's methodology, findings, strengths, and limitations and discusses the broader implications of digital interventions in healthcare. Recommendations are provided for future research and implementation strategies.

Keywords- Mental Health, Nursing, Psychosocial Safety Climate, e-Intervention, Cluster RCT, Digital Health, Care4Care

1. INTRODUCTION

Globally, nursing professionals face disproportionate mental health challenges due to high workload,

emotional fatigue, irregular shift schedules, and under-resourced environments. These stressors contribute not only to reduced well-being among nurses but also impact staff retention, quality of care, and healthcare delivery at large.

To address these growing concerns, innovative and scalable strategies are imperative. Digital mental health platforms have emerged as accessible support tools, but their dual impact on both individual well-being and systemic climate change remains underexplored.

The study by Boß et al. (2025) attempts to fill this critical gap by evaluating the Care4Care platform—a structured e-mental health intervention tailored for nursing staff. This review aims to evaluate the effectiveness, implementation, and implications of this intervention.

2. OBJECTIVES OF THE REVIEWED STUDY

Primary Objective:

- To determine whether the Care4Care platform improves the psychosocial safety climate (PSC).

Secondary Objectives:

- To evaluate changes in stress, depressive symptoms, emotional strain, job satisfaction, and presenteeism.
- To assess participant engagement and satisfaction with the platform.

3. METHODOLOGICAL REVIEW

The study evaluated in this review—conducted by Boß et al. (2025)—utilized a pragmatic, cluster-randomised controlled trial (cRCT) with parallel group allocation. This design was chosen to test the Care4Care platform under real-world clinical settings

and avoid contamination between participants within the same institution.

The trial was implemented across 33 healthcare facilities in Germany, involving a sample of 347 nursing professionals. This multi-site structure enhances the external validity of the study by capturing variations in healthcare settings and nursing populations.

The intervention arm received access to the full 17-module Care4Care platform, which was structured around three core components: work-directed strategies (such as improving team communication), person-directed techniques (like mindfulness and stress management), and digital monitoring tools for tracking user well-being. In contrast, the control group was given access to only two non-core modules, serving as a minimal-intervention comparator.

To measure outcomes, the researchers used standardized instruments, including the PSC-12 scale for psychosocial safety climate, the PSS-10 for perceived stress, and various single-item measures to assess job satisfaction and presenteeism. These tools are widely validated in occupational health literature and appropriate for the context.

Analytical methods included Bayesian multilevel modeling to account for the hierarchical data structure (individuals nested within facilities), supplemented by traditional frequentist sensitivity analyses to confirm the robustness of findings. This dual-approach analysis strengthens the interpretability and reliability of the results.

- Study Design: Pragmatic, cluster-randomised controlled trial with parallel groups.
- Setting: 33 German healthcare facilities.
- Participants: 347 nursing staff members.
- Intervention: 17-module Care4Care platform (work-directed, person-directed, monitoring tools).
- Control: Access to 2 non-core modules.
- Tools: PSC-12, PSS-10, single-item job metrics.
- Analysis: Bayesian multilevel modeling and frequentist sensitivity analysis.

4. RESULTS AND INTERPRETATION

- Psychosocial Safety Climate (PSC): A small improvement was observed in the intervention group (Cohen's $d = 0.25$), but the 95% Bayesian credible interval included zero (-0.32 to 4.44), indicating statistical non-significance.

- Perceived Stress: There was a statistically credible and practically meaningful reduction (Cohen's $d = -0.33$) in perceived stress.

- Depression and Emotional Strain: Positive trends were reported, though findings were not statistically conclusive.

- Self-Care: Moderate improvement was noted in participants' self-care behaviors.

- Job Satisfaction & Presenteeism: No significant differences were observed between the intervention and control groups.

- Platform Engagement: Approximately 40% of participants in the intervention group actively used the Care4Care platform.

5. STRENGTHS OF THE STUDY

Innovative, real-world tested intervention combining individual and systemic approaches. Use of Bayesian analysis and modular delivery were notable strengths.

6. LIMITATIONS OF THE STUDY

Short duration, low platform engagement, and lack of mediation analysis limited conclusions. Implementation gaps remain a challenge.

7. DISCUSSION

This critical review finds that the Care4Care intervention evaluated by Boß et al. (2025) demonstrates notable effectiveness in reducing psychological strain, particularly perceived stress, among nursing staff. The moderate effect size for stress reduction ($d = -0.33$) signifies practical value in digital mental health tools. However, the primary goal of improving the Psychosocial Safety Climate (PSC) was not conclusively achieved ($d = 0.25$). This highlights a key insight: while digital interventions may support individual well-being, they are less effective in driving systemic organizational change without external managerial reinforcement.

The study's strengths include a rigorous methodology—using a pragmatic cluster-randomised controlled trial (cRCT), validated instruments like PSC-12 and PSS-10, and dual statistical approaches (Bayesian and frequentist). These lend credibility to the reported outcomes. However, low platform engagement, limited intervention duration, and the

absence of mediation/moderation modeling reduce the generalizability of results.

Real-world application is feasible but contingent on organizational readiness. This review emphasizes the importance of blended models (digital + face-to-face), customized module delivery, and leadership support in enhancing platform impact. Future research should explore longer follow-up, user segmentation, and qualitative user experience feedback to understand barriers and motivators for engagement.

Ultimately, Care4Care presents a promising direction, but its full potential depends on how it is implemented, supported, and integrated within the institutional culture. The review concludes that digital platforms can augment mental health support in nursing—but they cannot replace systemic reforms or human connection.

The review underscores digital interventions' utility in stress reduction but highlights the need for organizational readiness and stronger managerial enforcement for systemic impact.

8. IMPLICATIONS FOR PRACTICE AND POLICY

Recommendations include blended delivery (digital + face-to-face), simplifying module complexity, and pre-assessing workplace readiness.

9. RECOMMENDATIONS FOR FUTURE RESEARCH

Suggestions: Longer follow-up, mediation modeling, user segmentation analysis, qualitative insight into engagement, and cost-effectiveness study.

10. CONCLUSION

Declaration

This is a narrative, critical review of a peer-reviewed research paper and does not include original data collection. Submitted under the category 'Review Paper'.

Appendix A: Reviewer Declaration and Contribution
Kapil Pandya is the sole author of this narrative critical review. He was not involved in the design, implementation, or authorship of the original research study conducted by Boß et al. (2025). All content provided herein is derived from publicly available,

peer-reviewed sources. No new data were collected. The review reflects independent critical analysis, interpretation, and scholarly commentary.