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Research Article

Advanced clinical simulation to enhance psychosocial competence and communication in end-of-life care: A pre-post study with nursing students

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ABSTRACT

Background: Developing psychosocial competence, particularly sense of coherence (SOC), alongside communication skills in end-of-life care is a persistent challenge in nursing education. This study examined the impact of advanced clinical simulation on psychosocial competence among nursing students during geriatric care clinical practicums.

Methods: A single-group pre–post study involved 50 fourth-year nursing students who completed two advanced simulation sessions. Outcomes were measured using the Sense of Coherence Scale (SOC-13), Professional Health Communication Skills Scale (EHC-PS), Rosenberg Self-Esteem Scale, and satisfaction questionnaire.

Results: The meaningfulness dimension of SOC improved significantly (19.56-20.16; $p = .001$; Cohen's $d = 0.48$). Communication skills showed mixed results: assertiveness approached significance ($p = .050$), while respect decreased significantly ($p = .034$). Self-esteem increased slightly (25.38-25.78; $p = .149$). Satisfaction was consistently high. Regression identified preintervention meaningfulness ($\beta = 0.321$; $p = .017$) and age ($\beta = 0.411$; $p = 0.007$) as predictors of postintervention SOC.

Conclusions: Advanced clinical simulation was associated with enhanced psychosocial competencies, particularly the meaningfulness dimension of SOC. The single-group pre–post design limits causal inference. Controlled studies are needed to confirm these associations and determine whether simulation directly enhances SOC.

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Introduction

The aging population and rising prevalence of chronic and terminal illnesses are global phenomena that increase the demand for specialized and high-quality end-of-life care (Hawes & Quinn-Lee, 2025; Parekh de Campos et al., 2022). Nursing professionals need robust competencies not only in technical patient management but also in communication and psychosocial skills to provide comprehensive, humane, and respectful support (Kavalieratos et al., 2016). Palliative care and end-of-life support represent some of the most complex and emotionally challenging experiences for patients, families, and healthcare providers (Espejo-Fernández & Martínez-Angulo, 2024; Hudson, Remedios, & Thomas, 2010). In Spain, palliative care has evolved significantly over recent decades, with nurses playing a vital role in developing more equitable and comprehensive care from disease onset through end-of-life stages, although significant training deficits persist across different healthcare settings (García-Salvador et al., 2023).

Despite the recognized importance of these competencies, recent studies show that nursing students frequently report feel-

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ing insufficiently prepared to handle communication and the emotional demands of end-of-life care (Durojaiye et al., 2023). Multiple international reports highlight that only a minority of nurses work in specialized palliative care services and that many professionals report knowledge gaps when caring for patients with palliative needs, despite the progressive integration of palliative care content into nursing curricula (Coats et al., 2023; Taheri-Ezbarami et al., 2024). This educational gap has been associated with heightened anxiety, fear, and stress when nursing students first confront death during clinical placements, which can undermine confidence and skill development in end-of-life care (Taheri-Ezbarami et al., 2024; You, 2025).

Antonovsky's (1987) theory of sense of coherence (SOC) offers a valuable conceptual model to understand how healthcare professionals develop resilience when facing stress, comprising comprehensibility, manageability, and meaningfulness that facilitate psychological adaptation. Recent studies confirm that SOC acts as a key protective factor against academic and clinical stress among nursing students, with higher SOC linked to better coping strategies and lower perceived stress during practicums (Hashemi et al., 2023; Rohani et al., 2025). The meaningfulness dimension shows responsiveness to experiential interventions, correlating with enhanced professional identity and reduced anxiety (Stoyanova et al., 2021).

Clinical simulation aligns with Kolb's (1984) experiential learning theory, positing learning as a cyclical process of concrete experience, reflective observation, abstract conceptualization, and active experimentation. In simulation-based nursing education, students gain concrete experiences via realistic scenarios, reflect during debriefing, conceptualize effective communication strategies, and experiment in subsequent practice-fostering psychosocial competencies like SOC in a safe environment (Poore et al., 2014; Wijnen-Meijer et al., 2022).

Bandura's (1997) social cognitive theory provides theoretical grounding for simulation's effects on psychosocial constructs, with self-efficacy developed through mastery experiences, vicarious learning, social persuasion, and physiological regulation. Simulation delivers mastery via realistic scenarios, vicarious learning through peer observation, social persuasion via facilitator feedback, and anxiety regulation for end-of-life care-all strengthening SOC's meaningfulness dimension as students perceive their role as impactful (Bandura, 1997; Fegran et al., 2023; Kim et al., 2016).

Advanced clinical simulation recreates emotionally charged end-of-life scenarios in safe environments where students practice, receive feedback, and reflect critically (INACSL Standards Committee, 2021). Systematic reviews demonstrate significant improvements in communication skills, self-confidence, and learning satisfaction among nursing students (Kim et al., 2016). Meta-analytic evidence indicates that structured communication skills training for generalist palliative care providers is associated with moderate effects on clinician behaviors in simulated interactions (SMD = 0.50; 95% CI 0.19-0.81), compared with traditional or no formal training (Selman et al., 2017).

In Spain, clinical practicums in geriatrics and palliative care are concentrated in the final year of nursing education (Conferencia Nacional de Decanos de Facultades de Enfermería [CNDE], 2024). Students frequently report distress and difficulty in developing communication skills for end-of-life accompaniment, grief support, and palliative sedation during placements (Gil-Mateu et al., 2024).

The primary objective of this study was to evaluate the impact of advanced clinical simulation on psychosocial competence (SOC) among final-year nursing students during geriatric care clinical practicums. Secondary objectives included assessing changes in communication skills, self-esteem, and satisfaction with the educational intervention.

Methods

Study design

The single-group pre–post design study evaluated an educational intervention based on advanced clinical simulation implemented during the 2024-2025 academic year at the Centre for Innovation and Territorial Simulation, Campus Terres de l'Ebre, Tortosa, Spain. The study is reported in accordance with the STROBE guidelines for observational studies (Von Elm et al., 2007).

Participants

The study population comprised 60 fourth-year nursing students enrolled in Clinical Practice V (geriatric care units) at the Faculty of Nursing. Participants were selected through purposive sampling, including only those meeting inclusion criteria and providing informed consent. The final sample size was 50 students.

Intervention protocol

The educational intervention consisted of two advanced clinical simulation sessions, with a total duration of three hours, conducted at the Centre for Innovation and Territorial Simulation following the INACSL Standards of Best Practice (INACSL Standards Committee, 2021). Each session followed a three-phase structure: briefing, simulation, and debriefing, lasting approximately 30, 15, and 45 minutes, respectively. Scenarios were developed using a backward design approach (Kern et al., 2009), with learning objectives aligned with the PEARLS methodology (Sessions et al., 2025). Sessions were conducted in a safe learning environment, with clear ground rules and a safety word to ensure psychological safety. Two trained facilitators ensured fidelity and consistency.

Students practiced communication skills through therapeutic communication in emotionally complex situations, applied shared decision-making while respecting patient autonomy and family needs, managed ethical conflicts, collaborated within interdisciplinary teams, and recognized and regulated their own emotional responses. Each group consisted of 14 participants, and all roles were designed to foster active participation, ethical learning, and critical reflection.

The first session involved four students with a high-fidelity manikin patient diagnosed with hemorrhagic stroke secondary to anticoagulant therapy, managed conservatively. Two students acted as nurses, one as the patient's daughter demonstrating ineffective coping and requesting active treatment, and one as the son demonstrating effective coping and acceptance, adding complexity to the family dynamics.

The second session involved seven students simulating an interdisciplinary team composed of a nurse, a nursing assistant, a geriatrician, a physiotherapist, a psychologist, a speech–language pathologist, and a social worker. Without a direct patient, the session focused on discharge planning for a patient reluctant to return home due to lack of resources. The simulation involved coordinating a safe discharge, exploring alternatives such as home care or respite services, and addressing ethical and psychosocial aspects.

Instruments

(a) Communication skills were assessed using the Professional Health Communication Skills Scale (EHC-PS) developed by Leal-Costa et al. (2016). This scale consists of 18 items divided into four dimensions: informative communication, empathy, respect, and assertiveness. Each item is rated on a 6-point Likert scale, with higher scores indicating better communication skills ($\alpha = 0.95$).

Table 1
Sense of Coherence Outcomes (SOC-13 Scale).

Dimension	Preintervention *M*(SD)	Postintervention *M*(SD)	*p* Value
Comprehensibility	23.66 (4.55)	24.58 (3.91)	.082
Manageability	17.12 (3.07)	16.92 (3.41)	.183
Meaningfulness	19.56 (2.29)	20.16 (1.93)	.001**
Total SOC-13	60.34 (6.19)	61.66 (5.68)	.090

Note. SOC-13 = Sense of Coherence Scale (short version). $n = 50$.
**$p < .01$.

(b) Self-esteem was assessed using the Rosenberg Self-Esteem Scale (Martín-Albo et al., 2007), consisting of 10 items rated on a 4-point Likert scale. Total scores range from 10 to 40.
(c) SOC was evaluated using the SOC-13 questionnaire (Virués-Ortega et al., 2007), which assesses comprehensibility, manageability, and meaningfulness. The instrument uses a 7-point Likert scale. Total scores range from 13 to 91, with higher scores indicating stronger SOC ($\alpha = 0.70$-0.92).
(d) Satisfaction was measured using an 8-item questionnaire developed ad hoc. Items are rated on a 5-point Likert scale ($\alpha = 0.87$).

Statistical analysis

Normality of continuous variables was assessed using Shapiro–Wilk tests and *Q*–*Q* plots. Wilcoxon signed-rank tests were used for nonnormally distributed outcomes (EHC-PS and SOC-13), and paired *t*-tests for approximately normal variables (self-esteem). Descriptive statistics (means ± SD, frequencies (%)) summarized participant characteristics and study variables, with Kruskal–Wallis tests for group comparisons when appropriate. Bonferroni correction was applied for multiple comparisons across EHC-PS subscales, SOC-13 dimensions, and self-esteem. Effect sizes (Cohen's *d*) were interpreted as small (0.20-0.49), moderate (0.50-0.79), or large (≥0.80) (Cohen, 1988). Multiple linear regression explored predictors of postintervention SOC and its meaningfulness dimension, with assumptions checked using residual plots, variance inflation factors, and Cook's distance. Significance for other analyses was set at $p < .05$. All analyses were conducted using (IBM SPSS Statistics version 29, IBM Corp., Armonk, NY) (Universitat Rovira i Virgili license).

Ethical considerations

The study received ethical approval from the Research Ethics Committee on Medicinal Products (CEIPSA) under project code 2023-TDO-0112. All participants provided informed consent following Declaration of Helsinki principles (World Medical Association, 2013).

Results

Sense of coherence outcomes

SOC-13 total scores increased approaching significance (60.34 ± 6.19 to 61.66 ± 5.68; $p = .090$, unadjusted). The meaningfulness dimension showed statistically significant improvement at the unadjusted level, with scores increasing from 19.56 ± 2.29 to 20.16 ± 1.93 (Wilcoxon $Z = -3.241$, $p = .001$, unadjusted; Cohen's $d = 0.48$), representing the study's most robust finding. This improvement did not survive Bonferroni correction (α adjusted = 0.006). Comprehensibility and manageability showed slight nonsignificant increases ($p = .082$ and $p = .183$, respectively) (Table 1).

The internal consistency of the SOC-13 questionnaire was moderate in the pretest ($\alpha = 0.76$) but decreased in the posttest ($\alpha = 0.59$), falling below the conventional 0.70 threshold. This reduction may reflect increased variability in responses following the intervention, suggesting differentiated reflection processes among students. Item-level analyses revealed that this reduction was primarily driven by the comprehensibility dimension (α posttest = 0.48), while manageability ($\alpha = 0.62$) and meaningfulness ($\alpha = 0.71$) maintained better reliability indices.

Communication skills outcomes

Communication skills showed mixed results across dimensions. Informative communication decreased slightly from 32.02 ± 2.64 to 31.72 ± 3.37 ($p = .410$). Empathy showed minimal variation, with a preintervention mean of 27.50 ± 1.96 and postintervention mean of 27.24 ± 2.46 ($p = .357$). Respect showed a significant decrease from 17.22 ± 1.20 to 16.76 ± 1.62 ($p = .034$). In contrast, assertiveness showed modest improvement, with scores increasing from 17.02 ± 2.84 to 17.82 ± 3.22, approaching statistical significance ($p = .050$) (Table 2).

Regarding overall communication

Overall communication skills remained practically stable, with total EHC-PS scores showing a slight decrease from 93.76 ± 6.64 to 93.54 ± 8.36 (Wilcoxon $Z = -0.978$, $p = .328$, unadjusted). After applying Bonferroni correction (α adjusted = 0.006), none of the EHC-PS dimensions showed statistically significant changes. Effect sizes provide relevant context: the respect dimension showed a small decrease (Cohen's $d = -0.33$), while assertiveness presented a small increase ($d = 0.27$). Informative communication ($d = -0.11$) and empathy ($d = -0.12$) showed negligible effect sizes. These findings suggest subtle changes in self-perceived communication competencies following the intervention, though causal attribution is limited by the study design. The internal consistency of the scale was acceptable, with Cronbach's α values of 0.62 before the intervention and 0.71 afterward.

Self-esteem

Self-esteem analysis showed slight improvement from pre to postintervention, though not reaching statistical significance. The mean score prior to the intervention was 25.38 ± 2.08, while after the intervention it increased to 25.78 ± 2.29 (Student's *t*-test; $p = .149$). These scores indicate moderate self-esteem levels according to established cutoff points (high: 30-40, moderate: 20-29, and low: <20). Scale reliability was good across both measurement points ($\alpha = 0.76$ pretest, $\alpha = 0.83$ posttest).

Satisfaction

Overall, participants reported high levels of satisfaction with the educational intervention. Mean scores across evaluated areas ranged from 4.30 to 4.87 on a 5-point scale, indicating consistently positive perceptions. Specifically, students rated methodology evaluation the highest (mean = 4.87 ± 0.30), followed by

Table 2
Communication Skills Outcomes (EHC-PS Scale).

Dimension	Preintervention *M*(SD)	Postintervention *M*(SD)	*p* Value
Informative communication	32.02 (2.64)	31.72 (3.37)	.410
Empathy	27.50 (1.96)	27.24 (2.46)	.357
Respect	17.22 (1.20)	16.76 (1.62)	.034*
Assertiveness	17.02 (2.84)	17.82 (3.22)	.050†
Total scale	93.76 (6.64)	93.54 (8.36)	.328

Note. EHC-PS = Professional Health Communication Skills Scale. $n = 50$.
*$p < .05$.
†Approaching significance.

Table 3
Multiple Linear Regression Predicting Postintervention Sense of Coherence.

Variable	*B*	SE	*β*	*t*	*p* Value
Constant	14.219	14.814	–	0.960	.342
Preintervention meaningfulness	0.527	0.212	0.321	2.479	.017*
Age	0.421	0.147	0.411	2.855	.007**
Gender	2.935	2.036	0.192	1.441	.157
Preintervention assertiveness	−0.112	0.305	−0.050	−0.367	.716
Preintervention respect	1.250	0.685	0.242	1.826	.075

Note. $R = 0.545$, $R^2 = 0.297$, adjusted $R^2 = 0.217$, $F(5,44) = 3.716$, $p = 0.007$.
*$p < .05$.
**$p < .01$.

Table 4
Multiple Linear Regression Predicting Postintervention Meaningfulness.

Variable	*B*	SE	*β*	*t*	*p* Value
Constant	3.084	6.158	–	0.501	.619
Age	0.070	0.062	0.150	1.137	.262
Gender	0.826	0.857	0.118	0.964	.340
Preintervention respect	−0.149	0.295	−0.063	−0.505	.616
Preintervention assertiveness	0.007	0.131	0.007	0.057	.955
Preintervention self-esteem	0.433	0.090	0.585	4.823	<.001***

Note. $R = 0.628$, $R^2 = 0.394$, adjusted $R^2 = 0.325$, $F(5,44) = 5.722$, $p < 0.001$.
***$p < .001$.

space evaluation (mean = 4.75 ± 0.53) and overall instructor evaluation (mean = 4.65 ± 0.38). Other areas, including session evaluation, material confidence, instructor evaluation, and learning satisfaction, also demonstrated strong satisfaction (mean 4.30-4.48).

Predictive modeling

Multiple linear regression analyses were conducted to identify factors predicting postintervention SOC and its meaningfulness dimension. For overall SOC, the model showed a moderate correlation ($R = 0.545$) and explained approximately 29.7% of the variance (adjusted $R^2 = 0.217$, $F = 3.716$, $p = .007$). Preintervention meaningfulness ($B = 0.527$, $p = .017$) and age ($B = 0.421$, $p = .007$) were significant predictors, indicating that higher baseline perceived significance and older age were associated with greater postintervention SOC. Sex, preintervention assertiveness, and preintervention respect were not significant, although respect showed a positive trend ($p = .075$) (Table 3).

For postintervention meaningfulness, the model demonstrated a moderate correlation ($R = 0.628$) and explained 39.4% of the variance (adjusted $R^2 = 0.325$, $F = 5.722$, $p < .001$). Preintervention self-esteem was the only significant predictor ($B = 0.433$, $p < .001$), suggesting that students with higher baseline self-esteem reported greater postintervention perceived significance. Age, sex, and pre-existing assertiveness and respect did not significantly predict postintervention meaningfulness (Table 4).

Discussion

The primary objective of this study was to evaluate the impact of advanced clinical simulation on psychosocial competence (SOC) among final-year nursing students during geriatric care clinical practicums. The most robust finding was a significant improvement in the meaningfulness dimension of SOC, suggesting that immersive simulation experiences may strengthen students' motivation and connection with professional values. Secondary objectives included exploring changes in communication skills, self-esteem, and satisfaction with the educational intervention.

Communication skills showed limited changes, with significant shifts only in specific dimensions. These findings invite reflection on what we can reasonably expect from brief educational interventions targeting complex interpersonal competencies. Communication skills, particularly nuanced dimensions like empathy and respect, develop gradually through repeated practice and reflection across diverse clinical encounters (Kerr et al., 2020; Juan & O'Connell, 2024). Our two simulation sessions, while intensive, represent relatively modest exposure compared to ongoing clinical practicums students were simultaneously experiencing. The modest changes observed may reflect the inherent difficulty of measuring and modifying subtle interpersonal capacities within a short timeframe (Gutiérrez-Puertas et al., 2020). With a sample of 50 students, we were better positioned to detect pronounced shifts than subtle refinements (Serdar et al., 2021). This is not merely a statistical consideration; it reflects a deeper question about educational expectations. Simulation excels at providing safe spaces

for practice and immediate feedback, yet communication mastery requires sustained engagement over time (Lei et al., 2022; Alharbi et al., 2024).

The fact that assertiveness showed some improvement, approaching statistical significance, while respect scores decreased, suggests students may have developed greater self-awareness, recognizing gaps in their own performance rather than simply gaining confidence. This kind of reflective insight, though difficult to capture quantitatively, often represents meaningful educational growth (Kerr et al., 2020; Mohammed & Shaban, 2025). These findings suggest several practical considerations for simulation design. The improvement in meaningfulness indicates that debriefing should focus less on technical critique and more on helping students explore what made experiences meaningful, inviting them to articulate how their actions aligned with emerging professional values (Cheng et al., 2014; Eppich & Cheng, 2015; León-Campos et al., 2025). Complex, emotionally charged scenarios.despite causing discomfort,appear important for fostering genuine engagement with the human dimensions of care (Røe et al., 2025).

The unexpected decrease in respect scores alongside improvements in assertiveness and meaningfulness warrants attention. This pattern suggests simulation may initially heighten awareness of communication limitations rather than resolving them. Educators should frame increased self-criticism as evidence of developing insight rather than failure. The value of simulation may lie in catalyzing self-awareness and motivation rather than immediate skill mastery (León-Campos et al., 2025). Since baseline self-esteem and meaningfulness predicted outcomes more strongly than communication skills, prebriefing activities that help students articulate professional values and personal goals may optimize learning. This positions simulation as one element within broader developmental processes, most effective when integrated with ongoing clinical practice and reflection (Atkins et al., 2026; Alharbi et al., 2024).

Regarding self-esteem, it increased slightly but without statistical significance, consistent with previous findings highlighting the relative stability of this construct among advanced students (Reverté-Villarroya et al., 2021; Dancot et al., 2024; Yeşilyurt & Kendirkiran, 2024). In contrast, the significant improvement in SOC's meaningfulness dimension aligns with Antonovsky's theory, which proposes that emotionally relevant experiences reinforce the motivational component of coherence (Antonovsky, 1987). Recent research supports that immersive interventions enhance meaningfulness more effectively than other dimensions (Wang et al., 2024; Liu et al., 2025; da Silva et al., 2025), as they facilitate alignment between personal values and professional identity (Matthews et al., 2019).

Finally, overall satisfaction with the intervention was very high across all domains, particularly regarding methodology and perceived learning outcomes. Nevertheless, these findings should be interpreted cautiously, as satisfaction levels are typically high regardless of objective learning gains (Al-Ghareeb & Cooper, 2016; León-Campos et al., 2025). Despite this limitation, the strong acceptability of the simulation supports its feasibility and educational value as a strategy for enhancing communicative and psychosocial competencies in complex clinical and interdisciplinary care settings (Mohammed & Shaban, 2025; Jallad, 2025; Foucault-Fruchard et al., 2024; Ratish, 2025).

Limitations

This study has several limitations. The single-group pre–post design and relatively small sample limit causal inference, as observed changes could reflect maturation, concurrent learning, or testing effects. Furthermore, the small effect sizes observed require cautious interpretation, as such effects typically necessitate larger sample sizes to ensure statistical power and result stability. The short assessment window captured only immediate effects, without examining long-term retention or behavioral transfer. Psychometric limitations included reduced postintervention reliability of the SOC-13 ($\alpha = 0.59$). Being conducted at a single academic site may limit generalizability. Future studies should include larger, adequately powered samples to confirm these findings and more accurately estimate effect sizes.

Conclusions

Advanced clinical simulation was associated with enhanced self-awareness and reflective learning among nursing students in end-of-life care and interdisciplinary teamwork. Although quantitative communication improvements were limited, the experience fostered deeper reflection and critical self-assessment. The significant meaningfulness improvement represents the study's most robust finding, suggesting immersive simulation may strengthen students' motivation and connection with nursing practice's purpose and values. High satisfaction confirms the simulation's feasibility and acceptability as a pedagogical strategy. These findings highlight experiential learning's potential to prepare future nurses for emotionally and ethically complex situations. However, the single-group pre–post design limits causal inference. Further controlled and mixed-method research with larger samples is recommended to confirm results, assess long-term outcomes, and explore how simulation contributes to integrated professional competencies' development.

Declaration of competing interest

The authors declare that they have no conflicts of interest relevant to the content of this manuscript.

CRediT authorship contribution statement

Silvia Reverté-Villarroya: Writing – review & editing, Writing – original draft, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Laia Grau-Castell:** Writing – review & editing, Software, Resources, Methodology, Formal analysis, Data curation. **Elsa Gil-Mateu:** Writing – review & editing, Methodology, Investigation, Data curation. **Elisabet Torrubia-Pérez:** Writing – review & editing, Data curation. **Astrid Vidiella:** Writing – review & editing, Investigation. **Míriam Segura-Meix:** Writing – review & editing, Investigation. **Ramon Palau:** Writing – review & editing, Supervision, Investigation, Formal analysis, Data curation, Conceptualization. **Mireia Adell-Lleixà:** Writing – review & editing, Writing – original draft, Conceptualization.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

We have added the following disclosure to the manuscript: ChatGPT (OpenAI, GPT-4o; accessed January-March 2025) and Claude (Anthropic, Claude Sonnet 4; accessed January 2025) were used only to translate validated questionnaire items from Spanish to English and to refine grammar and style in nonnative English text. All content was reviewed and verified by the authors. No artificial intelligence tools were used for data analysis, interpretation, literature review, or any aspect involving scientific judgment or study data.

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