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*Interdisciplinary Journal of Nursing and Health* (IJNH) is a continuation of *Infermieristica Journal* (eISSN 2785-7018). IJNH is an international, peer-reviewed, open-access scientific journal dedicated to advancing rigorous and globally relevant scholarship in nursing and health sciences. *Interdisciplinary Journal of Nursing and Health* (IJNH) promotes the development, integration, and exchange of knowledge that informs nursing research, clinical practice, and health policy. The journal supports evidence-based practice and fosters critical debate on contemporary issues related to the art and science of nursing. IJNH particularly welcomes studies that seek to evaluate and understand complex health care interventions, health systems, and health policies, using the most rigorous and appropriate research designs. The journal also aims to strengthen the methodological quality of health research by publishing high-quality methodological papers that introduce or refine analytic approaches, measurements, or research methods. All submissions undergo double-anonymized peer review, and IJNH publishes original contributions of relevance to the international health care community. IJNH is a fully open-access journal, accessible to readers worldwide without subscription or publication fees. The journal is published in English.

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# Self-Care Research: Expanding New Frontiers for Nursing Science

Ercole Vellone<sup>1,2</sup>, Davide Ausili<sup>3</sup>, Maddalena De Maria<sup>4</sup>, Maria Matarese<sup>5</sup>

<sup>1</sup> Professor of Nursing, Department of Biomedicine and Prevention, Tor Vergata University of Rome, Italy (mail: [ercole.vellone@uniroma2.it](mailto:ercole.vellone@uniroma2.it))

<sup>2</sup> Visiting Professor, Department of Nursing, Faculty of Nursing and Midwifery, Wroclaw Medical University, Poland

<sup>3</sup> Professor of Nursing, Department of Medicine and Surgery, University of Milano-Bicocca, Italy

<sup>4</sup> Associate Professor of Nursing, Department of Life Science, Health, and Health Professions, Link Campus University, Italy

<sup>5</sup> Associate Professor of Nursing, Research Unit of Nursing Sciences, Campus Bio-Medico University of Rome, Rome, Italy

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What does it mean, in 2026, to take care of yourself? The answer, as a full day of research at Link Campus University in Rome made clear, is more complex, more political, and more urgent than healthcare has traditionally assumed. On 5 May 2026, the Fourth International Workshop on "Self-Care Research: Expanding New Frontiers for Nursing Science" brought together researchers, doctoral students, and clinicians from across Italy and beyond. The studies they presented ranged from heart failure clinics to refugee reception centres, from osteoporosis units to the streets of Milan's Chinese neighbourhood, from diabetes to pulmonary diseases, from inflammatory bowel disease to stoma, from coronary heart disease to cancer, from healthy individuals to Parkinson disease. This editorial draws out the findings that matter most.

### Update of Middle range Theory of self-care of chronic illness

Barbara Riegel (Professor Emerita, University

of Pennsylvania) set the tone for the day. Her Middle-Range Theory of Self-Care of Chronic Illness, first published in 2012, now cited over 1,300 times, has just received its most significant update since its inception. The 2026 revision names, for the first time, a macro-level layer of structural determinants of self-care: rural versus urban living, food deserts, built environment quality, exposure to violence and crime, and local health policies (Riegel et al., 2026). Alongside these sit the familiar micro-level factors (e.g., age, gender, cognition, disease stage, and multimorbidity) and meso-level social influences (e.g., culture, caregivers, and community resources). Self-care does not happen in a vacuum. It happens in a world that either enables or obstructs it, and any theory that ignores that world is incomplete. Prof. Riegel also presented ViCCY, the Virtual Caregiver Coach for You, an intervention that supports caregivers' own health, not just their efficiency as carers. Roughly 17% of adults in Europe and United States provide unpaid informal care. Almost none of them are the target of self-care

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interventions. That oversight, the workshop made plain, can no longer stand.

### **Self-Care in the General Population**

The Self-Care Inventory (SCI) (Luciani et al., 2025), the first instrument ever built to measure self-care in the general population, has now been translated into fifteen languages and validated across multiple continents. Michela Luciani (University of Milano-Bicocca), who developed it in 2022 together with Davide Ausili, Barbara Riegel, Claudio Barbaranelli, and Maddalena De Maria, presented a pattern identified in the US and in Italian populations: people generally manage their health routines reasonably well, and are able to notice changes in their bodies adequately. However, when a symptom demands a response, they struggle. Self-care management scores are consistently the lowest of all three dimensions of Self-care. Culture shapes this gap differently: Italians score lower on diet and health monitoring, whereas Americans score lower on medication use for symptoms management. These differences are not noise. They are structured and matter for cross-national research design. In 340 Italian adults (Fabrizi et al., under review; University of Milano-Bicocca), self-efficacy was the primary modifiable predictor across all three dimensions. Younger men, singles, parents, and non-healthcare workers scored lower on specific scales. Income, chronic disease status, and perceived stress did not reach significance. In the general population, self-care deficits are not primarily driven by poverty or illness, they are driven by confidence. A three-year longitudinal study of 274 nursing students (Sangalli et al., under review) confirmed that self-care improves across training, but unevenly: male students lag behind their female peers throughout the programme. For nursing schools, that represents a direct challenge.

### **Disease-Specific Evidence Across Conditions**

Six disease-specific presentations showed the same theoretical framework generating sharply different clinical pictures, and the same lesson surfacing each time. In a study of 540 people with type 2 diabetes, Diletta Fabrizio (University of Milano-Bicocca) found that self-efficacy predicts self-care management more powerfully than any

other variable -. Qualitative findings brought that number to life: patients described the daily grind of dietary restriction, the slow normalisation of insulin levels, the private discipline of a disease that never stops. Marco Clari (University of Turin) examined self-care in COPD (Clari et al., 2024), integrating questionnaires, interviews, and focus groups, and identified four self-care styles: Proactive, Reactive, Hypoactive, Inactive, each associated with its own psychological profile. The clinical implication is direct: a patient who feels overwhelmed (hypoactive) needs a different intervention from one who simply ignores their symptoms (inactive). Chiara Tedesco, from Tor Vergata University of Rome (Tedesco et al., 2025) tackled osteoporosis, a disease that gives no signals until a bone breaks. Her research showed all three self-care dimensions are present even in this chronic condition, but transformed: monitoring happens through DXA scans, not body awareness; management fires after fractures, not before. And a cross-national comparison between Italian and Spanish patients revealed something deeper. Italians built their self-care stories around doctors and medications. Spanish people described self-care as ordinary daily habit. Same disease, different worlds. That is not individual variation. That is culture operating as a structural force. Ilaria Marcomini presented the Ostomy Self-Care Index for the 80,000 Italians living with a stoma, a population which is largely ignored (Marcomini et al., 2024). The tool works: strong psychometrics, meaningful correlations with quality of life. Giulia Petruccini showed that in inflammatory bowel disease (IBD), resilience and nurse-patient mutuality protect self-care, while depression and anxiety erode it systematically. Marco Di Nitto (University of Genoa) delivered the sharpest clinical message of the session: in 518 patients on oral anticancer treatment, lower self-care scores directly predicted more emergency admissions, increased rehospitalizations, and worse quality of life (Ucciero et al., 2025).

### **Dyadic Self-Care and Caregiver Contribution**

Self-care has never been a solo performance, and several presentations proved it. Roberta Di Matteo's HEARTS-IN-DYADS study enrolled 457 coronary heart disease patients and their caregivers across four Italian centres (Di Matteo et al., 2025). The headline finding



was counterintuitive: caregiver presence was negatively associated with patient self-care across all three dimensions. Di Matteo attributes this results to the fact that patients who have caregivers may simply be more dependent to begin with. Does caregiver involvement sometimes replace patient agency rather than support it? Self-efficacy, the data confirm, remained a positive predictor regardless. In the SODALITY study, Giulia Andrea Baldan (Tor Vergata University of Rome) interviewed 34 older adults managing multiple chronic conditions and their family caregivers (Baldan et al., 2025). Older adults tended to prioritize the most disabling symptoms, while caregivers prioritized the conditions they perceived as more dangerous or at higher risk of complications. Decision-making ranged from patient-led to caregiver-led to shared, and conflicts were often managed through dialogue, persuasion, or, at times, resignation. Task distribution also varied across dyads, with collaborative, older-adult-directed, and caregiver-directed patten. Regarding the concordance of older adults and family caregivers in perceived speed of symptom recognition (fast versus slow recognition) dyads can become more aligned over time, especially when older adults have higher education and greater self-efficacy. Other predictors of greater concordance were a diagnosis of COPD, higher self-care and better physical quality of life. No significant family caregiver predictors emerged. Congruent dyadic care type can affect patient mental health-related quality of life (HRQoL). Patient-oriented type congruence and collaborative type congruence were associated with better patient mental HRQoL, , whereas caregiver-oriented type congruence was associated with worse patient mental HRQoL. No significant associations emerged for caregiver mental HRQoL. Angela Durante stepped back to give the historical view: caregiver contribution to self-care has moved, over a decade, from invisible family work to measurable science (Buck et al., 2024). The instruments now exist. What the field still lacks, Durante argued, is rigorous measurement of what caregiving costs in terms of fatigue, burden, and health foregone. That is the next frontier.

### **Self-Care at the Margins: Migrants and Vulnerable Populations**

These three presentations showed what it looks like when the theory's new macro-level

layer collides with lived reality. Yi Chen (From Tor Vergata University of Rome and University of Milano-Bicocca) followed 40 first-generation Chinese immigrants in Milan. She reported that one participant had stopped running in the park near his home since he had been approached by strangers asking for money. Twice. He no longer felt safe. That is not a motivational deficit. That is violence functioning as a structural barrier to physical activity, exactly the kind of determinant the 2026 theoretical update now formally names, and that no health education programme can fix. Chen's broader findings underline the same point: self-care among this population is reactive, culturally embedded, and structurally constrained. Mariachiara Figura (University of Palermo) is building the tools to study this at scale (Figura et al., 2025). Her EMBRACING programme will follow vulnerable migrants through reception centres over time, mapping self-care behaviours against a framework that does not assume stable housing, healthcare continuity, or freedom from legal precarity. Camilla Elena Magi's BE-HEALTHNIC study focuses on settled immigrants with type 2 diabetes, people who have lived in Italy for an average of 22 years across nine ethnic groups. For the first time in Italy, the study will test how ethnicity, generational status, and years of residence shape self-care pathways (Magi et al., 2026).

### **Interoception, Heart Failure, and Parkinson's Disease**

Another contribution came from Giulia Locatelli. Her MUSA-BEA study (788 adults, data collected June 2024 to March 2026) is mapping cardiovascular risk using a comprehensive exposome approach (Locatelli et al., 2025). One of its variables is interoceptive sensibility, that is the capacity to notice and attend to internal bodily signals. The preliminary finding is striking: adults who score higher on "noticing" (awareness of bodily sensations, comfortable and uncomfortable) are significantly more likely to achieve adequate self-care maintenance. Greater body listening predicts better monitoring. Before a patient can respond to a symptom, they need to perceive it. That capacity, the data suggest, is not equally distributed. If interoception can be trained, it could become an intervention target unlike anything currently in the field's toolkit.

The REMOTIVATE-HF randomised controlled trial (principal investigator Ercole Vellone; 257 HF patient- caregiver dyads enrolled to date) is testing motivational interviewing against usual care in heart failure (Vellone et al., 2023). Both groups are improving at three months, a sign of trial engagement, though the full sample is not yet reached and conclusions about the specific effect of the intervention must wait. What is already clear is that the trial's design (i.e., dyadic enrolment, theory-grounded intervention, longitudinal follow-up) sets a standard. Monica Petralito (Tor Vergata University of Rome) closed the clinical presentations with self-care of Parkinson's disease, a condition where caregivers are indispensable, and no validated self-care instrument yet exists; a quantitative study of 311 dyads is the next step in filling that gap (Petralito et al., 2026).

### **Convergences and Emerging Priorities**

Step back from the individual studies, three patterns emerge with striking force. The first is self-efficacy. It appeared as a significant predictor in every single chronic condition studied, such as diabetes, COPD, cancer, IBD (Napolitano et al., 2025)(from Catholic University of Rome), heart failure, osteoporosis, the general population, nursing students, settled immigrants. It is modifiable. It responds to motivational interviewing, skills training, and therapeutic education. There is no longer a credible scientific excuse for designing self-care interventions that do not target it directly. The second pattern is the self-care management gap. People are reasonably good at self-care maintaining routines. They notice changes adequately. What they cannot do consistently is decide what to do when something goes wrong. That gap exists across every population and condition studied, and it deserves to be the primary focus of intervention design, not a footnote in general health education. The third pattern is the most consequential. Self-care is not an individual behaviour. It is a social, relational, and structural phenomenon. This was not a fringe position at the Fourth International Workshop. It was the consensus. Riegel's updated theory names it. Chen's migrant data illustrate it. Tedesco's cross-national comparison proves it. Baldan's qualitative work shows it operating inside the home. Figura's EMBRACING programme is

building the infrastructure to measure it at scale. A research agenda that locates the cause of self-care deficits in individual motivation alone — while ignoring food deserts, unsafe neighbourhoods, overcrowded housing, cultural mismatches, and exhausted caregivers — is not just incomplete. It is asking the wrong question.

The Fourth International Workshop showed that Italian nursing science is ready to answer it. The Interdisciplinary Journal of Nursing and Health looks forward to publishing future reports on self-care research.

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# Boredom and Health Literacy in Adolescents and Their Parents During Acute Hospitalization: Protocol for a Monocentric Observational Study

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**Correspondence:** Stefano Maiandi - Directorate of Nursing and Allied Health Professions, Azienda Socio-Territoriale di Lodi, Lodi, Italy; Mail: [stefano.maiandi@asst-lodi.it](mailto:stefano.maiandi@asst-lodi.it)

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**Stefano Maiandi<sup>1</sup>, Iryna Zavadina<sup>2</sup>, Stefania Mondini<sup>3</sup>, Anna Baldo<sup>1</sup>, Ester Busca<sup>1</sup>, Stefania Sciglitano<sup>4</sup>, Debora Guerreschi<sup>4</sup>, Domenico Scognamiglio<sup>1</sup>, Greta Ghizzardi<sup>1</sup>, Eleonora Aloï<sup>1</sup>**

<sup>1</sup> Directorate of Nursing and Allied Health Professions, Azienda Socio-Territoriale di Lodi, Lodi, Italy

<sup>2</sup> Department of Healthcare Professions, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

<sup>3</sup> S.C. Epatogastro e dei Trapianti Pediatrici - ASST Papa Giovanni XXIII, Bergamo, Italy

<sup>4</sup> Bachelor School of Nursing, University of Milan, ASST Lodi, Italy

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## Abstract

**Introduction.** Adolescence is a critical developmental period characterised by profound physical, psychological, and social changes. Hospitalisation for acute illness may increase adolescents' vulnerability, particularly when care pathways are not tailored to their specific needs. Among the emotional experiences reported during hospital stays, boredom has emerged as a frequent yet understudied phenomenon in adolescents. At the same time, hospitalisation may represent an opportunity to enhance health literacy, a key competence influencing adolescents' current and future health behaviours. Understanding the relationship between boredom and health literacy may support the development of patient-centred interventions aimed at improving the hospital experience.

**Methods.** This is a single-centre, cross-sectional observational study conducted in the paediatric ward of Lodi Hospital (Italy). Adolescents aged 12–17 years hospitalised for acute medical or surgical conditions and one accompanying parent will be consecutively enrolled. Adolescent boredom will be assessed daily using the Multidimensional State Boredom Scale – Italian Adolescent Version, while parental boredom will be measured using the adult version of the same scale. Health literacy will

be evaluated on the first day of hospitalisation using the Health Literacy for School-Aged Children (HLSAC) scale. Descriptive and inferential statistical analyses will be performed to explore predictors and associations.

**Results.** The study is expected to provide the first quantitative evidence on boredom levels among hospitalised adolescents and their parents, as well as adolescents' health literacy levels. Associations between boredom, health literacy, and contextual factors may emerge, identifying subgroups at higher risk.

**Discussion.** Findings will contribute to a better understanding of the adolescent hospital experience and inform the development of targeted interventions to improve emotional well-being, engagement, and quality of care in paediatric settings.

**Keywords:** Adolescent, Hospitalization, Boredom, Health Literacy, Pediatrics

## Introduction

Adolescence is the period of life most strongly characterised by intense and significant physical and psychological transformations, often accompanied by changes in social interactions and relationships, in which somatic and psychic development proceed along different pathways and at various speeds (Massimo et al., 2016). Although defining adolescence chronologically is complex, this developmental stage is generally considered to include individuals between 12 and 19 years of age (Alderman et al., 2019; Liuzzi et al., 2023; Tetteh-Quarshie & Risher, 2022).

Adolescents aged 10–17 years account for approximately 12% of all pediatric hospitalisations (Puntoni et al., 2025; Weiss et al., 2006) and, despite the relevance of hospital admissions in this age group, evidence on adolescents' hospital experience remains limited outside psychiatric settings, and acute admissions are comparatively underexplored in the literature compared with chronic conditions (Kirwan et al., 2025; Maiandi et al., 2026).

Hospitalisation places adolescents in a condition of particular vulnerability, especially when care pathways are not built around their real needs and expectations (Hybschmann et al., 2024). Among the various emotions and sensations adolescents experience, literature indicates that boredom is emerging as a frequently reported emotion among older adolescents during hospitalisation (Maiandi et

al., 2024); however, to date, no shared definition of boredom exists, particularly in the healthcare context (Zavadina et al., 2025). Recent evidence from adolescents' acute hospital journeys further suggests that boredom may represent a distinctive and clinically relevant feature of hospitalisation for this age group (Maiandi et al., 2026).

Studying this emotion poses a challenge for scientific research due to its complexity and temporal fluctuations (Spaeth et al., 2015), and identifying this emerging characteristic is also essential for designing preventive actions that may significantly improve the patient experience (Ceylan et al., 2022). Specifically, collecting the perspectives of young users enables the identification of priorities and care pathway elements that are not typically investigated, thereby involving them in the development of a high-quality healthcare system (Nordlind et al., 2022). Patients, in fact, are the only actors who experience the entire care trajectory, moving through each phase according to their own perspective and emotional experience (Ben-Tovim et al., 2008; Samaranayake et al., 2016; Trbovich & Vincent, 2019). The lived experience of the hospitalised adolescent also reveals when and why a positive or negative interaction occurs during the care process, helping to identify areas for improvement or strengths within a patient-centred perspective (Larson et al., 2019).

Importantly, beyond being an unpleasant emotional state, boredom may have functional implications for adolescents' participation in care. Contemporary



models conceptualise boredom as an affective signal of unsuccessful attentional and cognitive engagement with ongoing activity (Westgate & Wilson, 2018). Empirical evidence in adolescents links higher boredom to lower motivation and reduced self-regulation/engagement, suggesting that boredom may undermine the sustained attention and effort required to process information and remain involved (Vuyk et al., 2024). In hospital settings, this could translate into lower involvement in conversations about care, reduced attention to explanations, and less proactive help-seeking—mechanisms through which boredom could plausibly interfere with the ability to understand and use health information.

Improving the adolescent experience also means enhancing individual health literacy skills, defined as the ability to access, understand, evaluate, and use health information to make informed decisions in the health domain. (Fleary et al., 2018; Schulenkorf et al., 2022). In adolescents, this competence is particularly relevant, as the way they understand and manage health information today will influence their future health behaviours. Health literacy is not limited to merely comprehending medical terms or prescriptions, but also involves navigating the healthcare system, communicating effectively with professionals, and making autonomous and responsible decisions to transform hospitalisation from a merely time of care to a structured opportunity to promote higher levels of health literacy, transforming a potentially passive condition into an experience of informed and conscious participation (Fleary et al., 2018).

In the healthcare setting, adolescent health literacy has been framed as a set of skills used to organise and apply health-related knowledge and practices within real-world care contexts, emphasising the need for engagement with information and interactions with professionals (Massey et al., 2012). Therefore, if boredom reduces engagement and motivation, it may represent a contextual barrier to health literacy-related processes during acute hospitalisation—an association that remains insufficiently examined.

Furthermore, parents play a pivotal role in the hospitalisation of adolescents; in fact, if parents experience boredom, this may negatively impact their ability to engage and positively stimulate their children. Parents who frequently experience boredom may be less inclined to actively participate in family activities and provide a stimulating and supportive environment, thereby increasing the

risk of dysfunctional behaviours in adolescents (Alderman et al., 2019). Bored parents may transmit negative behavioural models to their children by demonstrating a lack of interest in constructive or creative activities (Vargas-Rubilar et al., 2023; Vega-Díaz et al., 2023). Within the hospital context, reduced parental engagement could plausibly affect adolescents' experience by lowering emotional support, decreasing constructive co-occupation, and limiting parents' facilitation of adolescents' involvement in care discussions and information processing.

Taken together, the literature suggests a clinically meaningful but underexplored pathway in acutely hospitalised adolescents: boredom may reduce engagement (attention, motivation, participation in care), which may in turn hinder health literacy-related processes in the hospital setting (Westgate & Wilson, 2018; Massey et al., 2012; Vuyk et al., 2024). Clarifying this gap is important to determine whether hospitalisation can realistically be leveraged as an opportunity to support adolescents' informed participation, or whether boredom represents a barrier that should be addressed through targeted, developmentally appropriate interventions.

The primary objective of this study is to describe levels of boredom and health literacy among adolescents hospitalised for acute illness. The secondary objective is to describe levels of boredom among parents accompanying adolescents during hospitalisation. In addition, the study aims to explore the association between adolescents' boredom and health literacy during hospitalisation, consistent with the proposed conceptual pathway linking boredom-related disengagement with health information use.

## **Methods and Materials**

### *Study design*

This is a single-centre, longitudinal observational study with consecutive enrolment of a convenience sample of adolescents hospitalised for acute illness and their parents.

### *Study setting and timeline*

The study will be conducted in the paediatric ward of Lodi Hospital, Lombardy, Italy. Recruitment will last approximately 12 months.

### *Participants: inclusion/exclusion criteria*

Adolescents will be enrolled after obtaining written consent from their parents or legal guardians to participate in the study. Parents will also participate only after providing written consent. Adolescents aged 12 years and 364 days to 17 years, hospitalised for acute medical (e.g., acute infections, respiratory diseases such as pneumonia or asthma exacerbations, gastrointestinal disorders such as acute gastroenteritis, dehydration, acute abdominal pain of medical origin, urinary tract infections) or surgical conditions (appendectomy, fractures requiring surgical intervention, abdominal or urological surgery), and with one parent continuously present throughout the hospital stay, will be included. Adolescents and parents who are unable to understand Italian or have inadequate comprehension to complete the questionnaire will be excluded. Adolescents without a parent during hospitalisation will also be excluded.

### *Study procedure*

The researcher will inform eligible participants before enrollment and provide them with the following documents: an information sheet and consent form for adolescents, an information sheet and consent form for parents, and a personal data processing form. These documents must be signed by both the adolescent and the parent after careful reading and understanding of the study objectives and procedures. Participants will receive a paper booklet (one for the adolescent and one for the parent) at the end of the first day of hospitalisation. They will be asked to complete one questionnaire per day, in the evening, throughout the hospital stay. Daily completion time is approximately 15 minutes. Each booklet contains six questionnaires; if hospitalisation exceeds six days, an additional booklet will be provided. Completed booklets will be returned to the researcher upon discharge in an anonymous, sealed envelope. The health literacy questionnaire will be completed once on the first day of hospitalisation.

### *Measures*

- Adolescent socio-demographic variables:

data will be collected on age, gender, previous hospitalizations, previous hospitalizations during the current year, family composition, presence of siblings in the household, availability and type of electronic devices and the possibility of exclusive use during hospitalisation, use of social media and technology, presence of scheduled entertainment activities during the hospital stay, and the need to continue school and study activities during hospitalisation.

- Parent socio-demographic variables: data will be collected on age, gender, occupation, availability and type of electronic devices and the possibility of exclusive use during the hospital stay, use of social media and technology, presence of scheduled entertainment activities during the hospital stay, and the need to continue work activities during hospitalisation.
- Adolescent Health literacy: this variable will be assessed using the Health Literacy for School-Aged Children (HLSAC) scale, validated in Italian (Velasco et al., 2021). The HLSAC is theoretically grounded in five core components: theoretical knowledge, practical knowledge, critical thinking, self-awareness, and citizenship. However, the Italian validation study supported a one-factor solution as the preferred factorial structure, indicating that the scale can be appropriately interpreted as measuring a single underlying construct of health literacy. Each statement is rated on a Likert scale, where participants indicate their level of agreement with the statement. The Italian version of the HLSAC has demonstrated good psychometric properties, including adequate construct validity and good internal consistency (McDonald's  $\omega = 0.80$ ), supporting its reliability for measuring health literacy among adolescents. Health literacy levels will be classified according to the total score obtained: a score between 10 and 25 indicates low health literacy, a score between 26 and 35 indicates moderate health literacy, and a score between 36 and 40 indicates high health literacy. The overall score will be calculated by summing the responses to the ten items of the scale. The principal investigator requested and obtained

authorisation from the authors to use the scale, which had been validated in Italian.

- Adolescent boredom: This variable will be assessed using the Multidimensional State Boredom Scale (MSBS) – Italian Adolescent Version (Spoto et al., 2021). The scale consists of 23 items rated on a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The Italian adolescent validation study confirmed the factorial validity of the instrument and reported good internal consistency, with McDonald's  $\omega = 0.90$  for the total score and values ranging from 0.72 to 0.92 across subscales, supporting its reliability for assessing boredom in adolescents. A total score of 88 is considered the cut-off for identifying individuals at potential risk of boredom. The researcher requested and obtained authorisation from the authors to use the Italian version of the scale, which had been validated.
- Parental boredom: this variable will be assessed using the Multidimensional State Boredom Scale (MSBS) (Craparo et al., 2017). The scale consists of 29 items that cumulatively evaluate an individual's experience of boredom, using a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The scores obtained across the five factors are combined to produce an overall boredom score. The Multidimensional State Boredom Scale (MSBS) does not define a standard cut-off to indicate boredom, as it measures levels of boredom across multiple dimensions (such as inactivity and lack of stimulation) rather than establishing a single threshold. However, higher scores indicate greater perceived boredom, although any specific cut-off may vary depending on the context or sample characteristics (Fahlman et al., 2013). The Italian validation of the MSBS demonstrated strong psychometric properties, including a Cronbach's alpha of 0.95 for the total scale and values between 0.80 and 0.89 for the subscales, indicating high internal consistency and good reliability. The principal investigator requested and obtained authorisation from the authors to use the Italian version of the scale, which had been validated.

#### *Data collection: quality management and storage*

Researchers will collect data during hospitalisation; no further follow-up is planned. All study data will be initially recorded on paper (in the form of questionnaires) and subsequently uploaded electronically. Each dataset will be assigned a unique study code to prevent participant identification and will be securely stored. Only the principal investigator will have access to the data sources.

#### *Analyses*

Descriptive statistics will be presented as frequencies and percentages for categorical variables. For continuous variables, central tendency will be calculated using means and standard deviations for normally distributed variables (Kolmogorov–Smirnov test with sample size  $n > 100$ ), and medians with interquartile ranges (IQR) for non-normally distributed variables.

Categorical variables will be compared using the chi-square test and Fisher's exact test when appropriate; Bonferroni correction will be applied when necessary.

Health literacy will be analysed both as a continuous variable (total HLSAC score) and as a categorical variable (low, moderate, and high levels) according to the classification provided by the scale.

Adolescent boredom will be assessed daily during hospitalization using the MSBS scale. For the primary analyses, a mean boredom score across the hospitalization period will be calculated for each participant to obtain a single summary measure of individual boredom levels.

To explore predictors of adolescent boredom, multivariable regression analyses will be performed using the mean boredom score as the dependent variable. Potential predictors will include adolescent socio-demographic variables, parental characteristics, and health literacy.

Continuous variables will be compared using univariate ANOVA for normally distributed data and the non-parametric Mann–Whitney U test for non-normally distributed data. The Wald test will be used, when indicated, for categorical variables with more than two levels.

Given that boredom is assessed daily during hospitalization, additional analyses using linear



mixed-effects models will be conducted to account for the longitudinal structure of the data and the within-subject correlation of repeated measures over time.

A p-value < 0.05 will be considered statistically significant. All statistical analyses will be performed using IBM SPSS Statistics software (version 29.0.2.0).

### *Sample size*

The sample size was calculated to obtain an accurate estimate of boredom levels in adolescents using the Multidimensional State Boredom Scale (MSBS) – Italian Adolescent Version (Spoto et al., 2021). Since the study aims to describe the level and characteristics of boredom in adolescents, the sample size was estimated based on the desired precision of the estimated mean MSBS score. The formula used to determine the minimum number of participants required was:

$n = (Z \cdot \sigma / E)^2$  where  $Z = 1.96$ , the critical value of the standard normal distribution for a 95% confidence interval;  $\sigma = 23.6$ , the standard deviation estimated from previous validation studies of the MSBS in Italian adolescents; and  $E$  = the acceptable margin of error, meaning the maximum difference between the sample mean score and the expected population mean.

Accepting a margin of error of  $\pm 3$  points, the required sample size is 238 adolescents.

### *Ethical considerations*

The Lombardia 1 Ethics Committee approved the study protocol (Experiment Registry No. 69-2025). Researchers will provide adolescents and parents with all relevant study information. Adolescents and parents may withdraw from the study at any time. Results may be presented at conferences and will be published in peer-reviewed journals.

### **Expected Results**

The study is expected to generate the first quantitative evidence on the presence, intensity, and characteristics of boredom among adolescents hospitalised for acute conditions and their parents. The analysis of daily patterns

of boredom, combined with socio-demographic variables and contextual factors, will allow the identification of specific moments or conditions of hospitalisation in which boredom is more likely to emerge. In parallel, assessing health literacy levels will provide a clearer understanding of adolescents' ability to access, interpret, and utilise health information during hospitalisation.

By integrating these two dimensions, boredom and health literacy, the study is expected to reveal potential associations that may inform future research and guide the development of interventions aimed at improving patient engagement and emotional well-being. The results may also highlight subgroups at greater risk of experiencing high levels of boredom or low health literacy, supporting the design of targeted strategies within paediatric settings. Ultimately, the findings will contribute to building a more nuanced and evidence-based understanding of the adolescent hospital experience, offering essential insights for enhancing care quality and informing organisational improvements.

### **Conclusion**

This study aims to describe boredom in adolescents systematically hospitalised for acute conditions and their parents, as well as their levels of health literacy. By utilising validated instruments and a structured data collection process, the project aims to address a significant knowledge gap regarding a phenomenon that is understudied yet potentially influential on the patient experience. The expected results will provide evidence to guide targeted interventions aimed at improving the quality of care, enhancing the value of hospital stay, and promoting the active and informed engagement of adolescents and their families.

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# Virtual Reality Interventions for Anxiety and Pain Management in Pediatric Healthcare: A Scoping Review Protocol

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**Correspondence:** Gian Domenico Giusti – S.S. Formazione e Qualità, Azienda Ospedaliera di Perugia, 06122 Perugia, Italy; Mail: [giandomenico.giusti@students.uniroma2.eu](mailto:giandomenico.giusti@students.uniroma2.eu)

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**Fabrizio Faina<sup>1,2</sup>, Gian Domenico Giusti<sup>1,2</sup>**

<sup>1</sup> *Formazione e Qualità, Azienda Ospedaliera di Perugia, Perugia, Italy*

<sup>2</sup> *Department of Biomedicine and Prevention, University of Tor Vergata, Rome, Italy*

## Abstract

**Introduction.** Anxiety and pain are common in pediatric patients undergoing healthcare procedures, with potential short- and long-term consequences. Virtual reality (VR), including immersive and non-immersive modalities, is increasingly used as a non-pharmacological intervention; however, the available evidence is heterogeneous and fragmented.

**Objective.** This scoping review aims to systematically map the characteristics, contexts, and reported outcomes of VR interventions for the management of anxiety and pain in pediatric healthcare settings.

**Inclusion criteria.** This review will consider studies involving pediatric populations (0–18 years) exposed to VR interventions (immersive, semi-immersive, or non-immersive) for anxiety and/or pain management in healthcare contexts.

**Methods.** This protocol follows the PRISMA-ScR guidelines and the Arksey and O'Malley framework, refined by Levac et al. A comprehensive search will be conducted in MEDLINE (PubMed), Scopus, and Web of Science, along with grey literature sources. Two independent reviewers will perform study selection and data charting using a standardized extraction form. Extracted data will include study characteristics, population details, VR type and devices, clinical settings, intervention features, and outcomes.

**Data synthesis.** Results will be synthesized descriptively using tables and figures to map the evidence. A narrative synthesis will be conducted to summarize key findings, identify patterns across VR modalities, populations, and settings, and highlight knowledge gaps. Where appropriate, findings

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will be stratified by age group, type of VR intervention, and clinical context.

**Keywords:** Virtual Reality, Pediatric Patients, Pain Management, Anxiety, Non-Pharmacological Interventions

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## Introduction

Anxiety and pain are frequent experiences in pediatric patients undergoing healthcare procedures, with both short- and long-term consequences on well-being and treatment adherence. Virtual reality (VR) has emerged as a promising non-pharmacological strategy to reduce anxiety and pain in children, through immersive and non-immersive modalities (Ferraz-Torres et al., 2022). Research has confirmed its effectiveness, with VR's immersive nature helping to reduce pain perception by redirecting attention (Camacho-Cruz et al., 2023). Recent studies have analyzed the application of this technique for the management of procedural pain (Hoag et al., 2022), particularly for venipuncture (Ryu et al., 2022) and intravenous drug infusion (Gerçek et al., 2025), but the scope appears to be broader. Taking into consideration the care settings, the studies report numerous settings ranging from the pre-operative (Huang et al., 2024), orthopedic (Bai et al., 2025) and general surgery settings (Gerards et al., 2025), to the onco-hematological (Reitze et al., 2024) and pediatric intensive care settings (Kilic et al., 2024). Additionally, reducing children's pain and anxiety through VR can also alleviate parental fear and anxiety (Kilic et al., 2024). Nursing services are the main determinant in the creation of the perception of satisfaction with the general healthcare services provided during the stay in the hospital (Yusefi et al., 2022). Adopting strategies to reduce pain and anxiety in hospitalized children is a duty of all healthcare personnel and must be a shared goal across the entire team. Distraction methods are currently widely used to control pain, and the introduction of VR has proven essential (Addab et al., 2022; Tas et al., 2022). The combination of pharmacological and non-pharmacological techniques is very effective and seems to be the current *modus operandi* in pediatric settings (Pérez-Pozuelo et al., 2025). However, the heterogeneity of technologies requires rationalization based on costs, effectiveness, and efficiency.

Despite the growing body of literature on the use of virtual reality for pain and anxiety management in pediatric populations, several systematic, integrative, and narrative reviews have primarily focused on the effectiveness of VR interventions in specific clinical contexts or procedures. However, the available evidence remains heterogeneous in terms of VR modalities, devices, intervention characteristics, and care settings.

To our knowledge, no recent scoping review has comprehensively mapped the range of VR interventions (including immersive and non-immersive modalities) across diverse pediatric healthcare settings within a clearly defined and up-to-date timeframe. Therefore, a scoping review is warranted to systematically explore and map the breadth of evidence, identify knowledge gaps, and provide a structured overview to inform clinical practice and future research.

Integrating VR into paediatric care requires careful evaluation of its effectiveness, feasibility and acceptability by both children and healthcare professionals. A scoping review is particularly suited to this topic as it allows for the inclusion of diverse study designs and methodological approaches, thus offering a broad perspective on how VR is being applied and evaluated.

A preliminary search of the MEDLINE database, the Cochrane Database of Systematic Reviews and the Joanna Briggs Institute (JBI) systematic review register was conducted, but no systematic or scoping reviews on the topic were identified that are currently underway or have been completed.

## Methods

This protocol was drafted using the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines (Moher et al., 2015) and the methodological framework of Arksey and O'Malley (Arksey & O'Malley, 2005), refined by Levac et al. (2010) (Levac et al., 2010). The final

protocol was registered on the Open Science Framework (osf.io/zdxct) on July 3, 2025 can be found via the following link: <https://osf.io/aqn58> (Faina & Giusti, 2025). Drafting this protocol ensures transparency, reduces reporting bias, and provides a reproducible methodological pathway. Any significant changes to this protocol will be reflected in the OSF registration and fully explained in the final review publication.

### Review question

Using the PCC framework (Population, Concept, Context), the research question guiding this review is: What are the characteristics, contexts, and reported outcomes of virtual reality interventions (immersive or non-immersive) for the management of anxiety and pain in pediatric healthcare settings (0–18 years)?

Table 1. PCC framework.

|            | Research Question                                                                                      | Keywords                          |
|------------|--------------------------------------------------------------------------------------------------------|-----------------------------------|
| Population | Children and adolescents aged 0–18 years.                                                              | Children, pediatric               |
| Concept    | The use of virtual reality (immersive, semi-immersive, non-immersive) glasses or headset.              | virtual reality, headset, glasses |
| Context    | Pediatric healthcare contexts where pain and anxiety may occur due to direct or indirect medical care. | Pain, management                  |

### Search strategy

The strategy will include both free-text terms and controlled vocabulary (MeSH) and sources published in English from January 2020 to December 2025 and indexed in MEDLINE, Scopus, Web of Science will be searched. Additional searches will be conducted using grey literature repositories to capture grey literature and other relevant information. Google Scholar will be used to locate non-academic documents that may not be indexed in traditional databases.

Search terms will be developed to reflect all components of the review question, including pediatric population, virtual reality interventions, anxiety, pain, and healthcare settings. It should be noted that in pediatric settings, anxiety in children often also causes pain and vice versa (Mascheretti et al., 2023).

Both controlled vocabulary (e.g., MeSH terms) and free-text keywords will be used to maximize sensitivity and ensure complete retrieval of studies addressing anxiety, pain, or both outcomes.

### Inclusion criteria

The inclusion criteria for this scoping review support the collection and extraction of data relevant to the research question and objectives. the Joanna Briggs Institute guidance construct of population, concept, and context will be followed and the inclusion criteria are in Table 2.

This review will include peer-reviewed articles (qualitative, quantitative, mixed-methods, comparative and non-comparative) as well as grey literature (conference proceedings, theses, technical reports). Studies in English and Italian, published from January 2020 to December 2025, will be considered.

Table 2. Inclusion/Exclusion criteria.

|            | Inclusion criteria                                                                                           | Exclusion criteria                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Population | Under and equal to 18 years of age.                                                                          | Over 18 years of age.                                                                                                   |
| Concept    | Interventions that involve the use of virtual reality with glasses/headsets.                                 | Interventions without glasses/headset or with other devices.                                                            |
| Context    | Pediatric setting in which painful nursing procedures or procedures involving pain management are performed. | Studies not involving the pediatric setting with pain management. Studies that investigate dental care. Study protocol. |

### Query strings

The search strategy was developed collaboratively by the research team. The final search strategy was initially developed for PubMed and subsequently adapted for use in other databases (Table 3). A language limit will be applied to include only studies published in English and Italian. Studies published between 2020 and 2025 will be considered by applying the specific filter.

### Study/source of evidence selection

Two independent reviewers will screen the titles and abstracts according to the inclusion



Table 3. Search strategy and query string.

| Database       | Research Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PubMed         | ((("paediatrics"[All Fields] OR "pediatrics"[MeSH Terms] OR "pediatrics"[All Fields] OR "paediatric"[All Fields] OR "pediatric"[All Fields]) AND ("pain"[MeSH Terms] OR "pain"[All Fields] OR "anxiety"[MeSH Terms] OR anxiety[tiab]) AND ("manage"[All Fields] OR "managed"[All Fields] OR "management s"[All Fields] OR "managements"[All Fields] OR "manager"[All Fields] OR "managers"[All Fields] OR "manages"[All Fields] OR "managing"[All Fields] OR "managment"[All Fields] OR "organization and administration"[MeSH Terms] OR ("organization"[All Fields] AND "administration"[All Fields]) OR "organization and administration"[All Fields] OR "management"[All Fields] OR "disease management"[MeSH Terms] OR ("disease"[All Fields] AND "management"[All Fields]) OR "disease management"[All Fields]) AND ("virtual reality"[MeSH Terms] OR ("virtual"[All Fields] AND "reality"[All Fields]) OR "virtual reality"[All Fields])) |
| Scopus         | TITLE-ABS-KEY ((PEDIATRIC OR PAEDIATRIC OR CHILD OR ADOLESCENT) AND ("VIRTUAL REALITY" OR VR) AND (PAIN OR ANXIETY))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Web of Science | pediatric (Topic) and pain OR anxiety (Topic) and virtual reality (Topic) and management (Topic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Google Scholar | Virtual reality pediatric pain or anxiety managment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Limits Applied | Language: English, Italian<br>Date: 2020 to 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

criteria, followed by full-text screening. The records will be imported (<https://www.rayyan.ai>), a web-based tool for managing and screening review articles (Ouzzani et al., 2016), where duplicates will be automatically removed and manually verified. Articles will then be screened independently by the authors in a blinded manner, with any discrepancies resolved through discussion and consensus. The results of the search and selection process will be presented in full in the final scoping review. This will include a PRISMA flow diagram (Moher et al., 2015) detailing the number of studies screened, included and excluded at each stage. Additionally, the quality of the included studies will be evaluated using Critical Appraisal Skills Programme (CASP) checklists, which will be applied according to the design of the study.

#### Data extraction

Two independent reviewers will extract data from the included sources using a standardized data charting form developed by the research team. Prior to full data extraction, the form will be pilot-tested on a sample of 5–10 included studies to ensure clarity, consistency, and completeness. Following this pilot phase, the form will be refined as necessary.

To ensure consistency in the charting process, the reviewers will undergo a calibration exercise, during which discrepancies will be discussed and resolved, and consensus will be reached on the interpretation of each data item.

Data extraction will be conducted

independently by the two reviewers. Any disagreements will be resolved through discussion, and if necessary, by involving a third reviewer.

In cases of missing, unclear, or incomplete data, attempts will be made to contact the corresponding authors of the included studies. Up to two contact attempts will be made via email, spaced approximately two weeks apart. If no response is received, the available data will be used, and the limitation will be reported in the final review.

All modifications to the data charting form during the review process will be documented and reported in the final manuscript.

A draft version of the extraction form, based on JBI recommendations, will be used (Peters et al. 2020). This tool will be modified and revised as necessary during the data extraction process. Any modifications to the tool during this process will be documented and described in the final review.

To ensure consistency in data extraction and synthesis, virtual reality (VR) interventions will be classified according to predefined operational criteria based on the level of immersion, hardware characteristics, and user interaction.

- Immersive VR:

Defined as systems using head-mounted displays (HMDs) that fully occlude the real-world environment and provide a 360° virtual experience (e.g., Oculus, HTC Vive). These systems typically allow head tracking and may include interactive components.

- Semi-immersive VR:

Defined as systems providing partial immersion through large screens, projection systems, or CAVE environments, where the user remains partially aware of the physical surroundings.

- Non-immersive VR:

Defined as virtual environments delivered via standard devices such as desktop computers, tablets, or smartphones, without sensory isolation from the real world.

In addition, VR interventions will be further categorized based on user engagement:

- Active VR:

Interventions requiring user interaction (e.g., gameplay, navigation, task completion within the virtual environment).

- Passive VR:

Interventions involving observation only (e.g., watching a virtual scene without interaction).

Furthermore, interventions will be classified as:

- Guided VR:

Experiences delivered with the support or instruction of a healthcare professional or therapist.

- Self-directed VR:

Experiences independently used by the patient without active guidance.

When classification is unclear, the original study description will be carefully reviewed and consensus will be reached among reviewers.

Data items will include:

- Author, year, country
- Study design
- Population (age group, sample size)
- Type of VR (immersive, semi-immersive, non-immersive)
- Device used (Oculus, smartphone-based, tablet, etc.)
- Healthcare setting (surgery, oncology, emergency, etc.)
- Outcomes measured (anxiety, pain, physiological measures, self-reported outcomes)
- Intervention characteristics (duration, frequency)
- Key findings and conclusions

The results that will be analyzed and considered are related to the use of virtual reality

as a non-pharmacological technique for pain management in children. Data will be extracted in a first phase in parallel by the reviewers and will be discussed in a second phase to verify agreement. A deductive approach will be used for data collection following an established framework, and the reviewers will extract data based on this framework.

The reviewers will ensure that the information adequately describes the framework. Discrepancies found in data extraction will be resolved through discussion among the reviewers.

Changes to the framework will be described in detail in the full review. If necessary, the authors of the included studies will be contacted to provide missing or additional data.

#### *Ethics and dissemination*

As this protocol involves secondary analysis of publicly available data, ethics review was not required. No patients or members of the public were involved in designing, conducting or reporting this protocol. The findings will be submitted to a peer-reviewed journal. They could also be presented at paediatric and nursing conferences and shared via OSF and professional networks.

#### **Data analysis and presentation**

Data will be synthesized descriptively, following a structured mapping approach in line with scoping review methodology. Given the anticipated heterogeneity in study designs, VR modalities, clinical contexts, and outcome measures, no quantitative pooling or meta-analysis will be performed.

Outcome domains will be defined a priori and will include: (1) pain outcomes, (2) anxiety outcomes, (3) physiological parameters (e.g., heart rate, blood pressure), and (4) behavioral and emotional responses. Where applicable, secondary domains such as satisfaction (patient and/or parent) and feasibility/acceptability will also be considered.

A taxonomy of outcome measures will be applied to enhance consistency in reporting. For example, pain outcomes will be categorized according to validated scales (e.g., self-reported, observational), anxiety outcomes according to

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standardized assessment tools, and physiological outcomes according to objective clinical indicators.

Results will be organized using structured tables and figures developed a priori, including matrices such as “healthcare setting × VR modality × outcomes” and “age group × intervention characteristics × outcomes.” These tables will support comparison across studies and facilitate identification of patterns and research gaps.

The tabulated results will be accompanied by a narrative synthesis focusing on the distribution of evidence across settings, types of VR intervention (immersive, semi-immersive and non-immersive) and outcome domains. Particular attention will be given to sources of heterogeneity and inconsistencies in outcome measurement and reporting.

This approach will enable a thorough mapping of the evidence base and the identification of knowledge gaps, thereby informing future research and clinical practice.

#### *Limitations and strengths*

This review may face limitations such as heterogeneity in interventions, devices, and outcome measures, as well as potential language bias due to exclusion of non-English/Italian studies. Strengths include adherence to PRISMA-ScR, broad inclusion criteria, and the first attempt to map VR interventions in pediatric healthcare for anxiety and pain.

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# Improving Symptom Perception in Recently Discharged Patients with Heart Failure: Protocol for a Single-Centre Randomised Controlled Trial of a Nurse-Led Teach-Back Intervention

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**Correspondence:** Greta Ghizzardi – Directorate of Nursing and Allied Health Professions, Azienda Socio-Territoriale di Lodi, Lodi, Italy; Email: [greta.ghizzardi@asst-lodi.it](mailto:greta.ghizzardi@asst-lodi.it)

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**Greta Ghizzardi<sup>1</sup>, Martina Torreggiani<sup>2,3</sup>, Ercole Vellone<sup>3,4</sup>, Stefania Lorenzani<sup>5</sup>, Fanny Zafferri<sup>5</sup>, Luciana Ghizzinardi<sup>5</sup>, Eleonora Aloï<sup>1</sup>, Stefano Maiandi<sup>1</sup>, Domenico Scognamiglio<sup>1</sup>, Luca Poggio<sup>5</sup>, Pietro Mazzarotto<sup>5</sup>**

<sup>1</sup> Directorate of Nursing and Allied Health Professions, Azienda Socio-Territoriale di Lodi, Lodi, Italy

<sup>2</sup> Nursing and Allied Profession Research Unit, Azienda USL-IRCCS di Reggio Emilia, Reggio Emilia, Italy

<sup>3</sup> Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy

<sup>4</sup> Department of Nursing, Faculty of Nursing and Midwifery, Wrocław Medical University, Poland

<sup>5</sup> Department of Cardiology, Ospedale Maggiore ASST Lodi, Lodi, Italy

## Abstract

**Introduction.** Heart failure (HF) is a chronic condition associated with substantial symptom burden, frequent hospitalisations, and increased morbidity and mortality. Nurse-led informational-educational interventions, particularly those based on the teach-back method, may support patients in monitoring and interpreting HF-related symptoms, improving self-care behaviours and medication adherence, and potentially contributing to long-term clinical stability after discharge.

**Objective.** To evaluate the effectiveness of a face-to-face nurse-led informational-educational intervention using the teach-back method on patient-reported perception and severity of HF-related somatic symptoms at 3 months after the first outpatient cardiology follow-up visit in patients recently discharged with HF.

**Trial design.** Single-centre, open-label, parallel-group

conduct of this research.

randomised controlled trial with 1:1 allocation (intervention vs control).

**Participants and Settings.** Patients recently discharged from a cardiology unit with a diagnosis of HF will be enrolled and randomised at their first outpatient cardiology follow-up visit. Assessments will be conducted at baseline and at 3, 6, 9, and 12 months.

**Interventions.** The intervention consists of a 30-minute nurse-led face-to-face informational–educational session structured according to the teach-back method, focused on HF symptom monitoring, interpretation of worsening symptoms, and self-care behaviours. The session will be reinforced through a follow-up phone call. The control group will receive usual care.

**Primary/Secondary Outcomes.** The primary outcome is patient-reported symptom perception and severity of HF-related somatic symptoms at 3 months, measured using the Heart Failure Somatic Perception Scale (HFSPS). Secondary outcomes include self-care behaviours assessed with the Self-Care of Heart Failure Index (SCHFI v8.0), medication adherence measured using the General Medication Adherence Scale (GMAS), and clinical stability during follow-up. Disease-specific quality of life will be assessed exploratorily using the Kansas City Cardiomyopathy Questionnaire (KCCQ).

**Ethical Considerations.** Ethical approval has been obtained from the Comitato Etico Lombardia 1 (approval number CET 195-2025). The trial has been registered on ClinicalTrials.gov (identifier: NCT07280728).

**Keywords:** Heart Failure, Patient Education as Topic, Nursing Care, Self-Care, Medication Adherence, Teach-Back Communication

## Introduction

Heart failure (HF) is a chronic, progressive syndrome characterised by the inability of the heart to meet the body's metabolic demands and represents the final stage of several cardiovascular conditions. It affects an increasing proportion of the adult population in Western countries, driven by ageing and improved survival after acute cardiac events (Authors/Task Force Members: et al., 2022; Virani et al., 2021). HF is associated with high morbidity and mortality, recurrent exacerbations, and significant healthcare utilisation. Patients frequently experience symptom burden, including dyspnoea, fatigue, palpitations, and peripheral oedema, which negatively affects their quality of life (QoL), functional capacity, and psychological well-being (Alpert et al., 2017; McGuinty et al., 2020).

Rehospitalisations for acute decompensation remain common and markedly contribute to healthcare costs (Mentz et al., 2021; Virani et al., 2021).

Evidence shows that adverse outcomes can be mitigated when patients engage in effective self-care behaviours and adhere to prescribed therapies (Bernard et al., 2023; Cramer et al., 2008; Koirala et al., 2020; Riegel et al., 2016; Zhao et al., 2021). These behaviours include self-care maintenance, self-care monitoring, and self-care management, as conceptualised in the updated theory of heart failure self-care (Lee & Riegel, 2025; Riegel et al., 2016). However, many patients display suboptimal self-care and poor therapeutic adherence after hospital discharge, increasing the risk of deterioration and rehospitalisation (Jarab et al., 2023; Koirala et al., 2020).



HF guidelines emphasise the importance of structured, multidisciplinary educational approaches to support patients in developing adequate self-care (Authors/Task Force Members: et al., 2022; Heidenreich et al., 2022). Among available educational approaches, nurse-led interventions have demonstrated positive effects on HF knowledge, self-care, and, in some cases, hospital utilisation (Bernard et al., 2023; Bulto & Hendriks, 2024; Ghizzardi et al., 2022). The teach-back method, in particular, has shown promise in enhancing patient comprehension, self-care behaviours, and medication adherence, with potential benefits for quality of life and healthcare utilisation (Bodenheimer, 2018; Centrella-Nigro & Alexander, 2017; Zare-Kaseb et al., 2024).

However, current evidence on teach-back in HF is fragmented, as studies differ in content, timing, setting, and outcome measures, and most involve small samples and short-term follow-up (Bodenheimer, 2018; Centrella-Nigro & Alexander, 2017; Talevski et al., 2020). Critically, no existing Randomised Controlled Trials (RCTs) have evaluated teach-back as a strategy to improve HF symptom perception or to support long-term clinical stability.

Within the clinical care journey of a patient with HF, the first post-discharge outpatient cardiology visit represents a critical transition point, during which many patients still struggle to manage their new condition, develop adequate symptom awareness, and maintain medication adherence. In the Italian healthcare landscape, this pattern is frequently observed in clinical practice, including in regional healthcare settings. In the local context of ASST Lodi (Northern Italy), clinical experience indicates that many patients present at this visit with insufficient understanding of HF and its self-management requirements, which manifests as low self-care engagement, limited attention to HF-related somatic symptoms, and suboptimal adherence to pharmacological therapy. These factors, taken together, increase their vulnerability to clinical worsening in the months ahead. A structured, nurse-led informational-educational intervention delivered using the teach-back method at this first visit may support patients in monitoring and interpreting HF-related symptoms, while also promoting self-care behaviours and medication adherence.

This single-centre RCT was designed to assess the effectiveness of a face-to-face nurse-led

informational-educational intervention on HF symptom perception at 3 months (primary outcome), and on clinical stability, self-care, and medication adherence over 12 months (secondary outcomes).

## *Objectives*

### Primary aim:

To assess the effectiveness of a face-to-face nurse-led informational-educational intervention on patient-reported perception and severity of HF-related somatic symptoms, measured with the Heart Failure Somatic Perception Scale (Pucciarelli et al., 2019), at 3 months after the first outpatient cardiology visit.

### Secondary aims:

- To assess the long-term effectiveness of a face-to-face nurse-led informational-educational intervention on disease clinical stability at 6, 9, and 12 months after the first outpatient cardiology visit.
- To measure at 3, 6, 9, and 12 months after the first outpatient cardiology visit:
  - a. Levels of self-care
  - b. Adherence to pharmacological therapy

## *Endpoints*

### Primary endpoint:

The primary endpoint will be measured using the HF Somatic Perception Scale (HFSPS) (Pucciarelli et al., 2019). The HFSPS will be used as a patient-reported measure of the perception and severity of HF-related somatic symptoms. Although the intervention is expected to support patients in monitoring and interpreting symptoms, the HFSPS does not directly measure early symptom recognition or decision-making in response to symptoms. Therefore, the primary endpoint will be interpreted as a change in perceived HF-related symptom burden/severity. A between-group difference of at least 7 points in HFSPS scores at 3 months after the first outpatient cardiology visit (in favour of the intervention group) will be used as the target effect size for sample size estimation. The rationale for this threshold is reported in the sample size section.

### Secondary endpoints:

- Proportion of patients classified as clinically

stable at 6, 9, and 12 months after the first outpatient cardiology visit, according to the predefined composite criteria described below.

1. Self-care: Between-group differences in mean standardised scores on the Self-Care of Heart Failure Index (SCHFI) version 8.0 (self-care maintenance, self-care monitoring, and self-care management scales) (Lee & Riegel, 2025), expected to be higher in the intervention group, assessed at 3, 6, 9, and 12 months after the first outpatient cardiology visit.
2. Between-group differences in mean total scores on the Italian version of the General Medication Adherence Scale (GMAS) (Napolitano et al., 2025), expected to be higher in the intervention group, assessed at 3, 6, 9, and 12 months after the first outpatient cardiology visit.

## Methods and Materials

### Study Design

Single-centre, open-label, randomised controlled trial with a 1:1 allocation ratio.

### Eligibility Criteria

Inclusion criteria for patients will be:

1. Age  $\geq 18$  years;
2. Discharged from the Cardiology Unit of the Hospital of Lodi;
3. Diagnosis of HF according to international guidelines (NYHA functional class II-IV assigned at discharge);
4. First outpatient cardiology visit scheduled 30 ( $\pm 15$ ) days after discharge;
5. Willingness to sign the informed consent form.

Exclusion criteria will include patients with:

1. Severe cognitive impairment, defined as a score of 0–3 on the Six Item Screener (20);
2. Discharge from units other than the Cardiology Unit of the Hospital of Lodi;
3. NYHA class I;
4. First outpatient cardiology visit scheduled less than 30 or more than 45 days after discharge;

5. Previous management in any HF Outpatient Clinic;
6. Acute coronary event within the last three months.

Based on the above criteria, enrolled participants will exclusively be patients attending their first outpatient visit for HF following a recent hospitalisation in the Cardiology Unit. These will therefore be considered incident cases. Patients already known to the outpatient clinic or referred from other clinics (i.e., prevalent cases) will be excluded from the study.

### Study procedures

All patients who meet the eligibility criteria at screening will be included in the study and randomly assigned to one of two arms (intervention vs control).

Intervention arm:

Patients in the intervention arm will receive a 30-minute face-to-face nurse-led informational and educational intervention at 30 ( $\pm 15$ ) days post-discharge, coinciding with their first outpatient cardiology visit. The intervention will be structured as follows.

1. Assessment of perceived symptoms, disease-specific QoL, therapeutic adherence, and self-care levels (T0);
2. Health information (provision of informational material from Penn Nursing Science – see subparagraph “Instruments” – explained using the teach-back method) (T0);
3. Provision of a daily diary for recording parameters (blood pressure, heart rate, weight) with instructions on how to fill it out (T0);
4. Reinforcement phone call for the informational intervention, including parameter assessment, at 30 ( $\pm 5$ ) days after the nurse consultation;
5. First follow-up data collection at 3 months after outpatient visit (T1)
6. Second follow-up data collection at 6 months after the outpatient visit; the informational-educational intervention will be repeated using the teach-back method (T2).
7. Third follow-up data collection at 9 months after outpatient visit (T3)

8. Fourth (and last) follow-up data collection at 12 months after outpatient visit (T4)

To ensure consistency across nurses, the intervention will be delivered using a structured intervention checklist covering the core educational components: HF symptom monitoring, recognition of worsening symptoms, medication adherence, daily weight and vital parameter monitoring, physical activity, and barriers to self-care. The checklist will also include the teach-back steps to be completed during each session. Completion of the checklist will be documented after each intervention session.

**Control arm:**

At T0, the same baseline data collection as the intervention arm will be conducted. Patients in the control arm will receive standard care. As part of routine clinical management at ASST Lodi, they will also receive a brief post-discharge telephone check one week after the first cardiology visit, during which vital signs are collected.

For both groups, follow-up calls will be conducted monthly up to 12 months after enrollment. These calls will be limited to the collection of vital parameters and safety monitoring using a standardised script. No structured education, counselling, teach-back reinforcement, or self-care coaching will be provided during these calls, except for referral to the responsible cardiologist if predefined signs of clinical instability are detected. This approach was chosen to ensure participant safety while minimising contamination between groups.

*Timepoints*

The study will include five data collection timepoints: at enrollment (T0), and at 3 (T1), 6 (T2), 9 (T3), and 12 (T4) months.

*Instruments*

Screening

To assess cognitive status, patients will complete the Six-Item Screener (Callahan et al., 2002). This tool evaluates temporal orientation and short-term memory through six items: three orientation questions and three recall tasks. Scores range from 0 to 6, with 0–3

indicating probable cognitive impairment and 4–6 indicating preserved or non-significantly impaired mental function.

Intervention

Patients meeting the eligibility criteria and providing informed consent will be enrolled and randomly assigned to the intervention or control arm. At enrollment (T0), baseline data (perceived symptoms, disease-specific QoL, therapeutic adherence, and self-care levels) will be collected before the nurse-led informational-educational intervention.

a) Assessment tools:

- Perceived symptoms: The Italian version of the HF Somatic Perception Scale (HFSPS), validated by Pucciarelli et al. (Pucciarelli et al., 2019), will be used. This 18-item instrument assesses the subjective perception and severity of HF-related somatic symptoms, including dyspnoea, palpitations, fatigue, peripheral oedema. Items are scored on a 0–4 Likert scale (0 = “not at all”, 4 = “extremely”), with higher scores indicating greater perceived symptom burden. In this study, the HFSPS will not be interpreted as a direct measure of early symptom recognition, but rather as a patient-reported measure of perceived somatic symptom burden/severity.
- QoL: The Italian version of the Kansas City Cardiomyopathy Questionnaire (KCCQ), validated by Miani et al. (Miani et al., 2003), will be used to assess HF-specific QoL and functional status. The 23-item instrument generates multiple domain scores and an overall summary score, with higher scores reflecting better QoL. QoL will be assessed as a descriptive and exploratory outcome and will not be included among the primary or key secondary endpoints.
- Therapeutic adherence and self-care: Medication adherence will be assessed using the Italian version of the GMAS (Napolitano et al., 2025). The GMAS consists of 11 items covering three adherence domains (patient behaviour, comorbidity/pill burden, and cost-related adherence), rated on a 1–4 Likert scale. Total scores range from 11 to 44, with higher scores indicating better adherence

to medication. Self-care will be assessed using the updated SCHFI 8.0 (Lee & Riegel, 2025), which is grounded in an expanded theoretical framework and assesses self-care maintenance, monitoring, and management. The Italian translation of the SCHFI 8.0 is currently undergoing psychometric validation. As with previous versions, each scale is standardised from 0 to 100, with scores  $\geq 70$  indicating adequate self-care (Lee & Riegel, 2025).

- **Health information:** The information provided to patients will be based on publicly available educational materials developed by Penn Nursing (Penn Nursing University of Pennsylvania, s.d.). Specifically, the following materials will be provided and explained using the teach-back method: “Overcoming Barriers,” “Overcoming Barriers to Self-Care,” “Managing HF Symptoms,” and “Staying Active to Help the Heart”. Patients who experience a new hospitalisation due to HF exacerbation or present to the emergency department for the same reason will be considered clinically unstable and classified as having adverse outcomes for the secondary endpoint. These events will not automatically result in study exclusion unless the participant withdraws consent or becomes unreachable for follow-up. In cases of withdrawal or loss to follow-up, data collected up to the time of the event will still be analysed according to the intention-to-treat principle.

### *Randomisation and Blinding*

After enrollment and baseline data collection, patients will be randomised (1:1) into the two study arms using block randomisation. Multiple randomisation blocks will be performed as needed to reach the predetermined sample size. A research assistant, who will not be involved in the study beyond performing the randomisation blocks, will carry out this process. The allocation of patients will be communicated by an external researcher to the HF Outpatient Clinic, who will not be directly involved in patient enrollment. Due to the nature of the intervention, blinding of participants and nurses is not possible, as they will be aware of the assigned study arm. However, outcome assessment will be blinded, as

data analysis will be conducted by a statistician who will not be able to distinguish between participants in the intervention and control groups. Blinding will also be maintained during data entry. As the primary outcome is patient-reported, the study may be exposed to expectancy and reporting bias. To minimise these risks, both groups will complete the same outcome measures at the same timepoints, using standardised instructions. Follow-up assessments will be conducted using predefined data collection forms, and participants will not be encouraged to report improvement. The statistician will remain blinded to group allocation until the primary analysis has been completed.

### *Setting and Nurse Training*

Nurses working at the HF Outpatient Clinic of ASST Lodi will be involved in the study. The Clinic, located within the Codogno Hospital of ASST Lodi, registers approximately 100 new first-visit patients per year. The nursing team includes four full-time nurses with ten years of experience in caring for HF patients. The medical staff consists of three cardiologists with an average of 10 years of experience; outpatient cardiology visits are scheduled weekly on three different days.

Before the study begins, all nurses involved in the intervention will undergo a standardised two-hour remote training session on the teach-back method, conducted by an expert researcher. The training will cover the theoretical principles of teach-back, and nurses will also be trained to use the intervention checklist and educational materials.

To promote intervention fidelity, nurses will receive a written intervention guide including the core contents to be addressed, suggested teach-back prompts, and documentation procedures. Before enrolling participants, nurses will complete at least one simulated teach-back session, discussed with the expert researcher. During the study, fidelity will be monitored through completion of the intervention checklist and periodic team meetings to discuss implementation issues and ensure consistency across nurses.

### *Teach-Back Principles*

The teach-back method will be applied using three core principles (Bonaldo & Maso, s.d.;



Centrella-Nigro & Alexander, 2017):

1. **Information delivery:** nurses will provide essential information in small units, using plain language and focusing on the most relevant self-care behaviours for HF management.
2. **Checking understanding:** after each key message, nurses will ask patients to explain the information in their own words using non-judgemental prompts, such as “I want to make sure I explained this clearly; can you tell me how you will monitor your weight at home?” or “What would you do if your breathlessness or ankle swelling worsened?”
3. **Closing the loop:** if the patient is unable to explain the information correctly, the nurse will rephrase the message and ask the patient to repeat it until adequate understanding is achieved. The same teach-back structure will be used across all intervention sessions and reinforced during the 6-month educational session.

#### *Sample Size and Statistical Considerations*

The sample size was estimated using TTestIndPower from the statsmodels Python package (version 0.14.2) (Josef Perktold et al., 2024). The formula used was:  $n = 2 \times \left[ \frac{Z_{1-\alpha/2} + Z_{1-\beta}}{\delta / \sigma} \right]^2$ , where ( $Z_{1-\alpha/2} = 1.96$ ) (critical value for a two-sided  $\alpha = 0.05$ ), ( $Z_{1-\beta} = 0.84$ ) (for 80% statistical power), ( $\delta = 7$ ) (clinically relevant difference), and ( $\sigma = 12.8$ ) (standard deviation). Applying the formula yields a sample of 106 patients. Considering a 10% dropout rate at 3 months, the total planned sample size is 118 patients (59 per arm, with a 1:1 allocation ratio). The values used to define the clinically relevant difference and the corresponding standard deviation were derived from the literature. Specifically, Jurgens et al. reported a standard deviation of 12.8 for HFSPS responses in a study of 378 HF patients (Jurgens et al., 2017). The minimal clinically significant difference (delta) on the HFSPS was set at 7 points in accordance with the half-standard deviation rule (0.5 SD rule), a well-established criterion for identifying meaningful changes in symptom assessment tools (20). Furthermore, studies on similar HF instruments suggest that changes between 5 and 10 points are clinically relevant

(Spertus & Jones, 2015). The value of 7 represents approximately 8% of the total HFSPS range (0–90) and is assumed to correspond to a clinically perceivable change in symptom severity.

All statistical analyses will be conducted according to the intention-to-treat principle, whereby all randomised participants will be included in the analyses in the groups to which they were initially assigned, regardless of adherence to the intervention or withdrawal. Descriptive statistics will be used to summarise baseline characteristics and outcome measures. Categorical variables will be presented as frequencies and percentages, while continuous variables will be reported as means and standard deviations, or medians with interquartile ranges, depending on their distribution.

The primary analysis will focus on the between-group difference in patient-reported perception and severity of HF symptoms at 3 months, as measured by the HFSPS. This comparison will be performed using an analysis of covariance (ANCOVA), adjusting for baseline HFSPS scores. This approach provides a more precise estimate of the intervention effect by accounting for individual differences at baseline. Results will be expressed as adjusted mean differences with corresponding 95% confidence intervals.

For secondary outcomes, the proportion of patients classified as clinically stable at 6, 9, and 12 months will be compared between groups using the Chi-square test or Fisher's exact test, as appropriate, for the composite measure of clinical stability. Additionally, a multivariable logistic regression analysis will be conducted to estimate the adjusted odds of clinical stability associated with the intervention, providing effect estimates along with 95% confidence intervals.

For self-care (SCHFI 8.0) and medication adherence (GMAS) scores, which are collected repeatedly over the 12-month follow-up period, changes over time and differences between groups will be analysed using linear mixed-effects models. Group, time, and group-by-time interaction terms will be included as fixed effects, with random intercepts specified for individual participants. Missing data will be handled under the assumption that the missing values are missing at random. Linear mixed-effects models will be used for repeated measures, as they can accommodate incomplete follow-up data. If necessary, sensitivity analyses using multiple imputation will be conducted

to assess the robustness of the results. KCCQ scores will be analysed descriptively at each timepoint and explored longitudinally using the same repeated-measures approach adopted for self-care and medication adherence, if data distribution and completeness allow. These analyses will be considered exploratory and hypothesis-generating; therefore, no formal sample size calculation was based on KCCQ outcomes. All statistical tests will be two-tailed, with a significance threshold set at  $p < 0.05$ . Data will be analysed using IBM SPSS Statistics version 31.0.1.0 (IBM Corp., Armonk, NY, USA).

#### *Study Duration and Completion*

The total expected study duration is 36 months (24 months for enrollment and 12 months to complete follow-up for the last enrolled patient). The enrollment period is scheduled to take place between February 2026 and January 2028. Data processing and reporting are anticipated between March and May 2028.

#### *Ethical considerations, data protection, and administrative aspects*

The study will be conducted in accordance with the Declaration of Helsinki, European Union Good Clinical Practice principles, and applicable national and European regulations on personal data protection. Ethical approval has been obtained from the Comitato Etico Lombardia 1 (approval number CET 195-2025), and the trial has been registered on ClinicalTrials.gov (NCT07280728). All participants will provide written informed consent before enrolment.

Data will be collected by authorised study personnel and processed only for study-related purposes. Study data will be pseudonymised during data collection and analysis and reported only in aggregate form. Essential study documents, including informed consent forms and data collection sheets, will be stored securely in accordance with institutional procedures. No additional costs will be charged to participants, and no compensation is planned for healthcare professionals or the facility. The study will be conducted within the institution's existing organisational and insurance framework for clinical research.

#### *Limitations*

This study has some limitations. First, due to the behavioural and educational nature of the intervention, blinding of participants and nurses is not feasible. As the primary outcome is patient-reported, expectancy and reporting bias cannot be fully excluded. However, standardised data collection procedures, identical assessment timepoints in both groups, blinded data entry, and blinded statistical analysis will be used to reduce this risk. Second, monthly follow-up calls are planned for both groups to monitor safety and collect vital parameters. Although these calls will not include structured education or counselling, they may increase patients' attention to symptoms and self-care behaviours, potentially attenuating between-group differences. Third, the single-centre design may limit the generalisability of the findings to other organisational contexts.

#### **Conclusions**

The conduct of this study will allow the evaluation of the effectiveness of a nurse-led, teach-back-delivered informational-educational intervention for the initial management of patients with HF. Practical health information provided at the start of the patients' care pathway can serve as a solid foundation to promote a lifestyle that helps slow the progression of HF. This approach could have a positive impact on both life expectancy and QoL for patients and their families. It could provide a basis for implementing systematic interventions in the outpatient cardiology setting.

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# The PREVASC Model in Cardiovascular Prevention for the Frail Older Adult: A Person-Centred, Dignity-Driven Multidisciplinary Approach to Value-Based Care

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**Correspondence:** Rocco Mazzotta – Department of Biomedicine and Prevention, University of Rome Tor Vergata Via Montpellier, 1 00133 Rome, Italy; Mail: [rocco.mazzotta@uniroma2.it](mailto:rocco.mazzotta@uniroma2.it)

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**Francesco Zaghini<sup>1</sup>, Chiara Vergari<sup>1</sup>, Rocco Mazzotta<sup>1</sup>, Roberta Morandini<sup>1</sup>, Alessandro Boccanelli<sup>2</sup>, Donatella Padua<sup>2</sup>, Vera Kopsaj<sup>2</sup>, Gianluca Cortis<sup>3</sup>, Niccolò Marchionni<sup>4</sup>, Nazario Carrabba<sup>5</sup>, Matteo Amico<sup>5</sup>, Eleonora Selvi<sup>6</sup>, Ercole Vellone<sup>1</sup>, Francesco Scerbo<sup>1</sup>, Rosaria Alvaro<sup>1</sup>**

<sup>1</sup> Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy

<sup>2</sup> UniCamillus – International University of Health and Medical Sciences, Rome, Italy

<sup>3</sup> Department of Cardiology, Anzio and Nettuno Hospitals, ASL Roma 6, Anzio, Italy

<sup>4</sup> Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy

<sup>5</sup> Cardiothoracovascular Department, Careggi University Hospital, Florence, Italy

<sup>6</sup> Cuore Nostro Association, Rome, Italy

## Abstract

**Introduction.** Cardiovascular diseases are the leading cause of morbidity and mortality in older adults, highlighting the need for effective preventive strategies. Structured screening programs may enhance the early detection and management of cardiovascular risk factors in this population.

To describe the impact of the PREVASC multidisciplinary model in promoting collaboration in cardiovascular prevention, collecting evidence on cardiovascular risk, and assessing gender differences in cardiovascular risk prevention among the older population.

**Methods.** In this descriptive correlational cross-sectional study data were collected from 1,836 participants aged 65–94 years enrolled in the PREVASC screening program. All professionals involved in the PREVASC screening campaign entered data

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into a standardized data collection system. Participants underwent structured cardiovascular assessments, and adherence to pharmacological therapy, sociodemographic characteristics, and time spent at the screening center were recorded. Descriptive statistics were used to analyze frequencies, percentages, and measures of central tendency and dispersion.

**Results.** Among the scheduled participants, 1,640 (89.37%) attended the screening, while 196 (10.63%) did not. Adherence to pharmacological therapy was high, with 1,453 participants (90%) reporting ongoing treatment; adherence was higher among women (91.4%) than men (88.3%). The mean age of participants was 72.52 years, with a predominance of women (55.9%). The average time spent at the screening center was 1 hour and 3 minutes (range: 22 minutes–3 hours and 47 minutes), indicating an efficient organizational structure.

**Discussion.** The PREVASC program demonstrated high participation rates and sustainable operational performance, supporting the feasibility of structured cardiovascular screening in older adults. The integration of multiprofessional expertise and community-based preventive activities represents a replicable model for effective cardiovascular prevention and early risk identification, with potential relevance for public health planning.

**Keywords:** Cardiovascular Prevention, Elderly Population, Health Promotion, Multidisciplinary Team, Prevention, Screening Program

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## Introduction

In the contemporary public health landscape, the sustainability of healthcare systems is no longer a theoretical goal but rather an ongoing challenge that demands evidence-based decision-making, adaptive capacity, and, above all, the equitable and efficient utilization of available resources (Harris et al., 2017). Current demographic transitions, particularly population aging and the increasing prevalence of chronic diseases, necessitate the implementation of new care models that prioritize appropriateness, continuity, and personalized interventions (Hajizadeh & Connelly, 2025).

Within this epidemiological context, cardiovascular diseases (CVDs) represent the leading global public health burden, accounting for the highest rates of mortality and disability worldwide (World Health Organization [WHO], 2025; Vos et al., 2023). In Italy, over 9.6 million individuals are estimated to live with

a cardiovascular condition (GBD 2023 Risk Factors Collaborators, 2024), with a substantial proportion of the disease burden concentrated among older adults (GBD 2023 Cardiovascular Disease Collaborators, 2025).

Despite their prevalence, many cardiovascular conditions remain undiagnosed and may first present as sudden cardiac death (SCD), an abrupt cessation of cardiac function in individuals who may otherwise appear healthy (Yow, Rajasurya, Ahmed & Sharma, 2024). Globally, SCD constitutes a major public health concern, responsible for more than 50% of all cardiovascular-related deaths in developed countries (Chugh & Reinier, 2019). Its incidence increases with age and the presence of established cardiovascular risk factors (Adabag et al., 2010). In Italy, over 60,000 individuals experience cardiac arrest annually (European Resuscitation Council, 2025), corresponding to an estimated incidence of approximately 1 case per 1,000 persons per year in the general population (Straus et al.,

2004). Notably, 20-25% of these events occur in apparently healthy individuals without a prior diagnosis of heart disease (Skjelbred et al., 2022). Consequently, cardiovascular screening programs not only address a critical public health need but also have the potential to save thousands of lives.

Cardiovascular diseases are also a central focus of gender medicine (Kavousi & van Lennep, 2023). Historically considered predominantly male conditions, CVDs are now recognized as the leading cause of death among women (Mosca et al., 2011). Evidence indicates that women are generally less likely to participate in health surveillance and preventive programs (Rubin, 2022), particularly in the domain of cardiovascular prevention (Gaye et al., 2022). Improving cardiovascular prevention strategies from a gender-sensitive perspective is therefore both a priority and an essential component of effective public health policy.

These considerations highlight the urgent need for public health policies and clinical research to systematically focus on primary and secondary prevention strategies that enable early risk identification and timely intervention prior to the onset of clinical symptoms.

To address this need, the PREVASC project was developed as a methodological framework for designing and testing operational standards in cardiovascular prevention, scalable within the national healthcare system. The PREVASC model rests on two interconnected pillars:

1. The development of community-based prevention programs integrating targeted screening to identify the most vulnerable populations, particularly older adults and individuals with low socioeconomic status.
2. The standardization of operational detection protocols to ensure timely and reliable identification of asymptomatic or silent cardiovascular conditions.

Following multiple pilot phases, the PREVASC project evolved into a streamlined and standardized model capable of meeting population-level cardiovascular prevention needs, subsequently implemented and made widely accessible.

The primary aim of this study was to describe the PREVASC model in facilitating institutional collaboration in cardiovascular prevention, generating robust evidence on cardiovascular risk, and assessing gender-related differences in

risk prevention among the elderly population.

## Methods

To achieve the main objective of this work, a descriptive correlational cross-sectional study was implemented during the implementation of PREVASC project. The organizational model adopted was based on a multidisciplinary team. Specifically, the screening campaign was conducted with the involvement of cardiology residents, nurses, nursing students and an activity coordinator, that have the role to ensure the regular conduct of activities, the quality of the data collected and patient safety. Each professional before starting the activities followed a preliminary training, aimed at the rigorous application of reception protocols, the performance of clinical activities within their scope of practice, and the standardized administration of the questionnaire. To ensure transparency and methodological rigor, we reported the data in accordance with the STROBE guidelines for cross-sectional studies (Von Elm E. Et al, 2022).

### *Sampling*

The PREVASC Project employed a self-selected recruitment approach, contingent upon meeting three eligibility criteria: age over 65 years, being asymptomatic, and having no positive history of heart disease. The screening program had an operational duration of seven weeks.

### *Procedure*

The operational workflow, carried out for each participant was structured into five distinct phases, designed to ensure efficiency, continuity, and a smooth screening pathway.

- Phase I: Admission

This phase included participant identification, collection of informed consent, and a detailed explanation of the timing and subsequent steps of the screening pathway.

- Phase II: Nursing Assessment

This phase was conducted through the administration of a structured questionnaire aimed at collecting essential quantitative and qualitative data for subsequent risk stratification

and analysis of the study context.

- Phase III: Pre-screening - Electrocardiogram

During this phase was performed an electrocardiogram (ECG) and the measurement of vital signs.

- Phase IV: Echocardiogram

In this phase were performed an echocardiogram together with a clinical interview, aimed at reporting findings and

defining the most appropriate clinical referral and follow-up pathway.

- Phase V: Discharge

At the end of the previous phases, the healthcare professionals resumed care of the patient by verifying understanding the recommendations, addressing any remaining questions, and providing counselling. The pathway concluded with accompanying the participant to the exit and the formal closure of the screening experience.



Figure 1. Model of PREVASC pathway.

### Instruments

During the screening campaign, were administered to the participants a questionnaire composed of validated scales available in the literature, along with a specific section dedicated to the collection of sociodemographic data.

Specifically, the questionnaire included the following sections:

- Collection of data on clinical history: A structured assessment form covering 14 body systems, with severity classified using a 5-point Likert-type scale (1 = absence of pathology; 2 = non-interfering;

3 = interfering; 4 = disabling; 5 = life-threatening)

- Collection of information on patients' functional capacity: a structured questionnaire in which patients were asked whether they were able to perform 11 predefined activities, with dichotomous (yes/no) responses
- Collection of information regarding the therapy undertaken by participants: A structured table comprising two columns—one for the drug name and one for the corresponding dosage—allowing up to 18 entries per patient



- Collection of data on social vulnerability (Abeliansky et al., 2021);
- Assessment of socioeconomic conditions (Spiers et al., 2022): Socio-economic conditions and health status were assessed using a structured questionnaire with closed-ended items, including perceived income sufficiency (4 levels), annual household income (5 categories), self-rated health (5-point scale), number of chronic conditions (4 categories), citizenship (3 categories), marital status (5 categories), educational level (3 categories), assignment to a primary care physician (2 categories), and household size (5 categories). The instrument provides a standardized collection of self-reported socio-demographic, economic, and health data for descriptive and inferential analyses.
  - Collection of data on self-care (De Maria et al., 2021): a structured questionnaire reflecting behaviors over the past month. The instrument comprises three sections:
    - **Section A – Self – Care Maintenance scale:** 7 items rated on a 5-point Likert scale (1 = never, 5 = always).
    - **Section B – Self – Care Monitoring scale:** 5 items on the frequency of self-care behaviors (1 = never, 5 = always) and 1 item on symptom recognition with three response options; for recognized symptoms, speed of recognition is rated on a 5-point scale from “not quickly” to “very quickly.”
    - **Section C – Self – Care Management scale:** 5 items assessing likelihood of self-care when symptomatic (1 = not likely, 5 = very likely) and 1 item evaluating perceived effectiveness of the last remedy used (0 = did nothing, 5 = very effective).

### *Statistical Analysis*

Data collected during the screening campaign were simultaneously entered into an Excel spreadsheet. In this preliminary analysis, the data were analyzed using descriptive statistics to assess frequencies and percentages, as well as measures of central tendency (mean, median, and mode) and dispersion (standard deviation and range).

To examine gender differences in access to

the PREVASC pathway, the chi-square test was applied to variables expressed as frequencies and percentages. Conversely, for variables summarized using means, Student's t-test was performed. All statistical analyses were conducted using IBM SPSS Statistics (version 26.0; IBM Corp., Armonk, NY, USA). A p-value < 0.05 was considered statistically significant.

### *Ethical consideration and informed consent*

The study protocol of the PREVASC project was approved by Regional Ethics Committee for Clinical Experimentation of Tuscany – Area Vasta Centro section (Ref. No. 21702\_oss). Participation in the study was voluntary, and written informed consent was obtained prior to initiation of the PREVASC pathway and completion of the questionnaire. Before providing consent, all participants were fully informed about the study aims, procedures, potential risks and benefits, data confidentiality safeguards, and their right to withdraw from the study at any time without consequences. Data collected for this study were anonymized; each record was assigned a unique numeric code at the time of questionnaire completion. All data are stored in a secure, protected database in accordance with the General Data Protection Regulation (EU Regulation 2016/679—GDPR). The study was conducted in compliance with the ethical principles of the Declaration of Helsinki (World Medical Association, 2013) and in accordance with relevant European guidelines (Council for International Organizations of Medical Sciences, 2016) as well as national regulations on research ethics and data protection (Legislative Decree No. 196/2003, as amended by Legislative Decree No. 101/2018).

### **Results**

During the observation period of the PREVASC project (data updated as of 30 December 2025), a total of 1,836 participants were scheduled. Of these, 1,640 attended the screening, while 196 did not show up, corresponding to an overall no-show rate of 10.68%. On average, more than 46 patients were scheduled per day (M = 39.04; range 14–50), of whom nearly 39 were actually examined (M = 34.89), with an absence rate of 10.68% (N = 196).

Analysis of the data on a weekly basis also showed that adherence to screening remained high and stable over time, with a participation rate of 89.37%. Specifically, each week a minimum of 152 and a maximum of 298 citizens were scheduled. Of these, those who actually participated in the screening ranged from a minimum of 142 to a maximum of 267 per week, with the number of absences ranging from 10 in the seventh week to 44 in the fifth week.

#### *Socio-demographic characteristics*

As shown in Table 1, from a demographic

perspective, the enrolled population had a mean age of 72.52 years (range 65–94). Gender distribution showed a female predominance, with 902 women (55.9%) and 712 men (44.1%). Regarding smoking status, 284 participants (17.6%) reported being smokers, while 1,328 (82.4 %) were non-smokers. Educational level indicated a heterogeneous population: 290 individuals (18 %) with primary education, 674 (41.9 %) with lower secondary education, 569 (35.3 %) with an upper secondary school diploma, and 77 (4.8 %) holding a university degree.

Table 1. Characteristics of the study population.

| Variables        | Total Population (N = 1,614) |      |       |      |         | Male (N = 712) |      |       |      |         | Female (N = 902) |      |       |      |         |
|------------------|------------------------------|------|-------|------|---------|----------------|------|-------|------|---------|------------------|------|-------|------|---------|
|                  | N                            | %    | M     | DS   | Range   | N              | %    | M     | DS   | Range   | N                | %    | M     | DS   | Range   |
| <b>Age</b>       |                              |      | 72.5  | 5.8  | 65-94   |                |      | 73.0  | 5.6  | 65-93   |                  |      | 72.2  | 6.0  | 65-94   |
| <b>Weight</b>    |                              |      | 73.6  | 13.6 | 36-140  |                |      | 80.3  | 12.5 | 48-140  |                  |      | 68.3  | 12.0 | 36-120  |
| <b>Height</b>    |                              |      | 165.2 | 9.0  | 142-192 |                |      | 172.3 | 6.9  | 145-192 |                  |      | 159.7 | 6.1  | 142-180 |
| <b>Education</b> |                              |      |       |      |         |                |      |       |      |         |                  |      |       |      |         |
| Primary School   | 290                          | 18.0 |       |      |         | 81             | 11.4 |       |      |         | 209              | 23.2 |       |      |         |
| Middle School    | 674                          | 41.9 |       |      |         | 300            | 42.1 |       |      |         | 374              | 42.6 |       |      |         |
| High School      | 569                          | 35.3 |       |      |         | 291            | 40.9 |       |      |         | 278              | 30.9 |       |      |         |
| Degree           | 77                           | 4.8  |       |      |         | 38             | 5.3  |       |      |         | 39               | 4.3  |       |      |         |

Within the enrolled population, 1,453 participants (90%) reported taking pharmacological therapy, whereas 161 participants (10%) were not on any treatment. Gender-specific analysis showed that 629 men (88.3%) and 824 women (91.4%) were on therapy.

#### *Gender Difference*

In this preliminary analysis, was verified the

difference between gender respect the habit to smoke and the intake of therapy. How is shown in Table 2, the chi square test reveals that in the habit to smoke there isn't difference statistically significant between male and female ( $X^2 = 0.642$ ;  $p = 0.42$ ), instead, respect the intake of therapy, it was found a statistically significant difference between male and female ( $X^2 = 4.011$ ;  $p = 0.04$ ).

Table 2. Gender difference.

| Variables      | Total Population (N = 1,614) |      | Male (N = 712) |      | Female (N = 902) |      | X <sup>2</sup> | p    |
|----------------|------------------------------|------|----------------|------|------------------|------|----------------|------|
|                | N                            | %    | N              | %    | N                | %    |                |      |
| <b>Smoke</b>   |                              |      |                |      |                  |      |                |      |
| Yes            | 284                          | 17.6 | 119            | 16.8 | 165              | 18.3 | 0.642          | 0.42 |
| No             | 1,328                        | 82.4 | 591            | 83.2 | 737              | 81.7 |                |      |
| <b>Therapy</b> |                              |      |                |      |                  |      |                |      |
| Yes            | 1,453                        | 90.0 | 629            | 88.3 | 824              | 91.4 | 4.011          | 0.04 |
| No             | 161                          | 10.0 | 83             | 11.7 | 78               | 8.6  |                |      |

With regard to the organization of the care pathway, the time participants spent within the screening center, calculated from entry to exit, showed good operational sustainability. The overall mean time was 1 hour and 3 minutes, with a minimum of 22 minutes and a maximum of 3 hours and 47 minutes.

## Discussion

This study aim to evaluate the effectiveness of the PREVASC model in facilitating institutional collaboration in cardiovascular prevention, generating robust evidence on cardiovascular risk, and assessing gender-related differences in risk prevention among the elderly population.

The preliminary results of the PREVASC project are very encouraging, because was verified a high adherence to the cardiovascular screening program by the citizen. In particular the results suggest that recruitment strategies and the accessibility of the program are very efficacy. Weekly analysis showed consistent participation, with minor fluctuations likely related to external factors such as holidays or local events, indicating stable engagement over time.

The screening pathway demonstrated good operational sustainability. Participants spent a mean of just over one hour in the center, highlighting the program's capacity to manage high volumes of participants effectively even in the presence of complex clinical assessments. Timing data related to participants' pathways within the PREVASC project indicate a generally efficient operational flow, despite the presence of physiological variability linked to the intensity of the clinical assessments required.

With respect to gender differences, the PREVASC project revealed novel findings that had not been previously reported. First, the results showed a higher participation of women than men in the PREVASC project. This finding contrasts with previous research indicating that women, for various reasons, tend to take less care of their health than men, particularly with regard to cardiovascular diseases (Thompson & Daugherty, 2017), to the extent that statistics report higher mortality rates among women (Gao et al., 2019). This result may be explained by the ease of access to the PREVASC screening program. Indeed, thanks to institutional collaboration and partnerships with several organizations,

the screening campaign was brought directly to citizens in shopping centers. This approach likely facilitated women's participation, allowing them to access the program during routine daily or family-related activities, without requiring additional time commitments, factors that are often cited as barriers to early disease diagnosis (Martinez-Marcos & De la Cuesta-Benjumea, 2014).

Moreover, these preliminary results showed that women were taking more pharmacological therapies than men. This may suggest a higher burden of cardiovascular disease among women, resulting in increased medication use. This finding is highly relevant for the scientific community, as it supports previous evidence showing that cardiovascular diseases are highly prevalent in the female population (Luca et al., 2022) and underscores the importance of cardiovascular prevention strategies, particularly among women.

## Limitations

This study presents several limitations that should be considered when interpreting the findings. First, the cross-sectional design does not allow causal inferences regarding the relationships observed, particularly in relation to gender differences in therapy uptake and participation patterns. Longitudinal studies are needed to evaluate long-term outcomes and the sustained impact of the PREVASC model on cardiovascular risk reduction.

Second, the recruitment strategy was based on voluntary, self-selected participation, which may have introduced selection bias. Individuals more attentive to their health or already engaged in preventive behaviors may have been overrepresented, potentially limiting the generalizability of the findings to the broader older population.

Third, the study was conducted within a specific regional and organizational context, characterized by strong institutional collaboration and community-based implementation. Therefore, external validity may be limited, and caution is required when extrapolating the results to different healthcare systems or sociocultural settings.

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## Conclusions

The results of the PREVASC project, although still preliminary, demonstrate that structured screening programs organized through well-defined operational pathways can be implemented efficiently and sustainably in older populations, ensuring high levels of participation while maintaining the quality of the clinical pathway.

The PREVASC project represents a significant example of effective integration between academia, the healthcare system, and the local community, showing high efficiency and patient-centered managerial appropriateness. Therefore, healthcare managers should consider with interest the results achieved through the PREVASC project, as they may support the implementation of early identification programs for pathological conditions and risk factors, providing valuable evidence not only at the clinical level but also in the field of public health.

From this perspective, PREVASC represents a replicable model capable of supporting the planning of increasingly targeted, effective, and sustainable preventive interventions. Accordingly, future initiatives should aim to replicate and expand this model in order to reach progressively broader segments of the population, including individuals affected by conditions other than cardiovascular diseases.

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# Creative Drama in Developing Communication Skills: The Bidirectional Effects of a Service-Learning Program Implemented by Nursing Students

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**Correspondence:** Nurten Arslan Işık – Faculty of Health Sciences, Department of Psychiatric Nursing, Istanbul Medeniyet University, Istanbul, Turkey. E-mail: [nurten.isik@medeniyet.edu.tr](mailto:nurten.isik@medeniyet.edu.tr)

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**Nurten Arslan Işık<sup>1</sup>, Dılşa Azizoğlu Keleş<sup>1</sup>, Aynur Aytekin Özdemir<sup>2</sup>, Ayşe Okanlı<sup>1</sup>, Merve İnan Budak<sup>1</sup>, Nesrin İlhan<sup>3</sup>, Furkan Keleş<sup>4</sup>, Büşra Kütük Kurt<sup>2</sup>, Özge Şanlıtürk<sup>3</sup>**

<sup>1</sup> Faculty of Health Sciences, Department of Psychiatric Nursing, Istanbul Medeniyet University, Istanbul, Turkey

<sup>2</sup> Faculty of Health Sciences, Department of Pediatric Nursing, Istanbul Medeniyet University, Istanbul, Turkey

<sup>3</sup> Faculty of Health Sciences, Department of Public Health Nursing, Istanbul Medeniyet University, Istanbul, Turkey

<sup>4</sup> Faculty of Health Sciences, Department of Nursing Fundamentals, Istanbul Medeniyet University, Istanbul, Turkey

## Abstract

**Introduction.** Drama-based education and service-learning have shown potential for promoting adolescents' communication and socio-emotional competencies. This study aimed to examine changes in middle school students' communication skills following a creative drama-based service-learning program and to explore the experiences of nursing students who implemented the program.

**Methods.** A single-group pretest-posttest quasi-experimental design was used. Nursing students delivered a 120-minute creative drama session to seventh- and eighth-grade students at a public middle school in Istanbul. The sample consisted of 81 students ( $M = 12.50$ ,  $SD = 0.60$ ; 53.1% female). Communication skills were assessed using the Communication Skills Scale (CSS) before and after the intervention. Nursing students' experiences were explored through semi-structured interviews and analyzed using thematic analysis.

**Results.** Posttest CSS scores were higher than pretest scores ( $Z = -7.51$ ,  $p < .001$ ,  $r = .83$ ). Female students had higher communication skills scores than male students ( $U = 546$ ,  $p = .010$ ,  $r = .33$ ). Thematic analysis revealed six themes: personal growth, stronger communication awareness, reduced stage anxiety, improved teamwork, increased professional motivation, and initial challenges and suggestions for

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improvement.

**Conclusion.** Short-term creative drama-based service-learning programs may help enhance middle school students' communication skills while also providing meaningful personal and professional learning experiences for nursing students.

**Keywords:** Communication Skills, Creative Drama, Service Learning, Middle School Students, Nursing Education, Drama-Based Intervention

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## Introduction

Adolescence is a critical developmental period marked by substantial advances in cognitive, emotional, and social functioning. During this stage, the ability to manage peer relationships plays a central role in adolescents' social adjustment and academic engagement. Communication skills such as active listening, empathy, and constructive conflict resolution are particularly important for maintaining positive peer interactions. Difficulties in these skills have been linked to outcomes such as interpersonal conflict, social exclusion, and lower self-esteem (Eccles, 1999; Rubin et al., 2006). Previous research with youth populations has also associated communication-related difficulties with loneliness and reduced life satisfaction (ArslanIşık et al., 2026). In contrast, school-based programs designed to strengthen socio-emotional and communication competencies during early adolescence have been shown to support positive developmental outcomes, including improved peer relationships, social integration, and academic engagement (Durlak et al., 2011; Roorda et al., 2011; Chen-Bouck et al., 2023).

### *Drama-Based Education*

In recent years, drama-based education has gained increasing attention as an experiential pedagogical approach for supporting adolescents' socio-emotional learning and communication development. Often referred to as creative drama, this approach involves structured activities such as role-playing, improvisation, and scenario-based enactments, enabling participants to explore social situations through embodied and collaborative learning processes (Goldstein & Winner, 2012; Conradty & Bogner, 2020). Within such environments, students are encouraged

to experiment with different perspectives, practice communication strategies, and reflect on interpersonal dynamics in a psychologically supportive context.

Empirical research, including both meta-analytic and primary studies, suggests that drama-based educational approaches contribute to the development of communication and social competencies. Meta-analytic evidence indicates that drama-based pedagogy is associated with a range of positive educational and socio-emotional outcomes, particularly when implemented within structured learning environments and facilitated by trained instructors (Lee et al., 2015; Batdı & Elaldi, 2020). Complementing these findings, individual empirical studies have reported that participation in drama activities is linked to higher levels of empathy, perspective-taking, and self-confidence among adolescents (Goldstein & Winner, 2012; Lewandowska & Węziak-Białowolska, 2022). Together, these findings highlight the potential of drama-based education as a multifaceted approach to fostering communication-related competencies, although its effectiveness may vary depending on contextual and cultural factors.

### *Service-Learning in Nursing Education*

Service-learning represents another educational approach that has gained prominence in health professions education. Broadly defined, service-learning integrates academic instruction with community engagement, allowing students to apply theoretical knowledge in real-world contexts while addressing community needs (Furco, 1996; Bringle et al., 2013). In nursing education, service-learning has been increasingly recognized as a high-impact pedagogical strategy for supporting the development of professional competencies.



Evidence from the literature indicates that participation in service-learning activities is associated with improvements in communication skills, teamwork, and critical thinking among nursing students. Educational interventions implemented by nursing students have also been shown to enhance awareness and professional competencies in community settings (Işık, 2021). An integrative review by Marcilla-Toribio et al. (2022), for example, reported that service-learning programs in nursing education are frequently linked to enhanced empathy, increased social awareness, and a stronger commitment to community engagement. When nursing students implement educational or health-promotion activities in community settings such as schools they may simultaneously develop professional skills while contributing to community well-being (Schmidt & Brown, 2022).

However, the effectiveness and reception of such experiential and community-based educational approaches may be shaped by broader cultural norms and social expectations.

#### *Cultural Context: Gender and Communication*

Although the international literature highlights the potential benefits of both drama-based education and service-learning, the outcomes of such interventions may vary across cultural and social contexts. Cultural norms related to communication styles, emotional expression, and gender roles may influence how adolescents engage with interactive educational activities.

Turkish society has been described as reflecting a combination of collectivist relational values and relatively high power-distance norms, which may shape interpersonal expectations and communication patterns within social and educational settings (Hofstede, 2011; Kağıtçıbaşı, 1996; Sunar & Fişek, 2005). Within such contexts, gender differences in emotional expression and interpersonal communication have been reported in adolescent populations. Some studies suggest that female adolescents may demonstrate higher levels of empathic engagement and openness in emotionally expressive activities, whereas male adolescents may experience greater social constraints regarding the expression of vulnerability in group settings (Ozen et al., 2020; Altıntaş-Atay et al., 2025). However, empirical findings remain mixed, and further research is needed to better understand how

cultural and gender-related factors may shape adolescents' responses to interactive educational interventions.

#### *Research Gap and Study Objectives*

Despite increasing international interest in both drama-based education and service-learning, limited research has examined how these approaches can be integrated within a single intervention framework. Several additional gaps also remain. First, although drama-based approaches have been widely studied, their implementation within Turkish middle school settings has received relatively limited empirical attention. Second, few studies have explored interventions that combine drama-based educational activities with service-learning models in which university students actively facilitate learning experiences for younger adolescents. Third, the potential role of contextual factors, such as gender-related communication patterns, in shaping the outcomes of such interventions remains underexplored.

Accordingly, the present study aimed to examine communication skill outcomes associated with a creative drama-based service-learning program implemented by nursing students with middle school adolescents in Turkey. In the Turkish education system, middle school includes grades 6–8, typically serving students aged 11–14; the current study focused on seventh- and eighth-grade students (ages 12–14), representing early-to-middle adolescence. Using a quasi-experimental pretest–posttest design, the study aimed to examine differences in students' communication skill scores following participation in the program, while also exploring the qualitative experiences of nursing students who facilitated the activities.

Based on these objectives, the following hypotheses were proposed:

H<sub>1</sub>. Students' post-test CSS scores will differ significantly from their pre-test scores following participation in the drama-based education program.

H<sub>2</sub>. Female students' post-test CSS scores will differ significantly from those of male students.

H<sub>3</sub>. Nursing students will report positive qualitative experiences related to personal development, communication awareness, teamwork, and professional motivation following participation in the program.

By examining these outcomes, the study aims to contribute to the emerging literature on drama-based educational practices and service-learning models within culturally contextualized educational settings.

## Methods

### *Design*

This study employed a quasi-experimental, single-group pretest-posttest design to examine differences in communication skill scores between pretest and posttest measurements among seventh- and eighth-grade middle school students following participation in a creative drama-based educational program. Because the study did not include a control group, findings are interpreted as reflecting pre-post differences rather than causal effects.

In addition, a qualitative descriptive approach was used to explore the experiences of first-year nursing students who facilitated the intervention.

### *Setting and Participants*

#### Facilitator Group (First-Year Nursing Students)

The facilitator group consisted of 60 first-year nursing students enrolled in a public university in Istanbul. First-year students were selected because they were concurrently enrolled in a compulsory “Communication Skills” course that includes both theoretical instruction and applied training in interpersonal communication.

Students were assigned by course instructors to one of six communication skill themes: active listening, appropriate emotional expression, building self-confidence, developing empathy, intragroup cooperation, and conflict resolution. Assignment was not randomized but followed a structured allocation process designed to ensure balanced group sizes and diversity in academic performance and participation levels.

#### Intervention Group (Middle School Students)

The intervention was conducted with seventh- and eighth-grade students enrolled in a public middle school in Istanbul. These grade levels were selected because early adolescence (ages 12–14)

represents a developmental stage characterized by rapid social and emotional development and increased responsiveness to structured psychosocial and educational activities.

Prior to participation, written informed consent was obtained from the parents or legal guardians of all students. In addition, students were informed about the purpose and procedures of the study in age-appropriate language, and their written assent was obtained before data collection. Participation was entirely voluntary.

A total of 81 students (54 girls;  $M = 12.50$  years,  $SD = 0.60$ ) participated in the study. All students attended the full session and completed both the pretest and posttest assessments. No attrition occurred; therefore, the final sample consisted of 81 participants.

### *Sample Size*

An a priori power analysis was conducted using G\*Power 3.1 for paired-sample t-tests, assuming a medium effect size ( $d = 0.50$ ),  $\alpha = .05$ , and statistical power of .80. The analysis indicated that a minimum of 34 participants would be required to detect statistically significant pre-post differences.

The final sample size of 81 students exceeded the required minimum and was therefore considered adequate for the planned analyses.

### *Development and Implementation of the Intervention Program*

#### Preparation Phase

The intervention was developed over a four-week preparation period. Nursing students worked under faculty supervision for two hours per week. During this period, they received structured guidance in creative drama techniques, including role distribution, script development, stage organization, and the effective use of body language, vocal emphasis, and intonation.

Each thematic group was divided into two subteams:

1. performers, responsible for acting, and
2. a technical support team, responsible for costume planning, script refinement, and stage preparation.

For each communication theme, two

consecutive scenes were designed. The first scene depicted ineffective or maladaptive communication behaviors, while the second reenacted the same scenario using effective communication strategies aligned with the assigned theme. This dual-structure format was intended to facilitate observational learning and contrast-based reflection.

To ensure consistency across performances, all groups received standardized guidance and supervision from faculty members during the preparation phase.

### Implementation Phase

The intervention was delivered in a single session held in the university conference hall. The session included six performances, each lasting approximately 15–18 minutes. The total duration, including transitions between performances, was approximately 120 minutes.

The duration was determined to ensure sufficient time for the delivery of six structured drama performances and brief thematic introductions, while also remaining consistent with school-based activity schedules and adolescents' attention capacities.

Between performances, brief transition intervals (approximately 2–3 minutes) allowed for stage adjustments. During these intervals, a designated nursing student briefly introduced the communication skill focus of the upcoming performance to facilitate intentional observation and thematic awareness among participants.

### Qualitative Data Collection and Analysis

Following the intervention, qualitative data were collected from nursing students through brief written reflections. Students were asked open-ended questions designed to elicit their experiences regarding communication awareness, personal development, teamwork, and professional motivation (e.g., "What did you learn from this experience?" and "How did participating in this activity influence your communication skills?").

The qualitative data were analyzed using a descriptive thematic analysis approach. All responses were read multiple times to achieve data familiarization. Initial codes were generated inductively and subsequently grouped into

broader themes based on conceptual similarity. Both positive and negative experiences were included to ensure a balanced and transparent representation of participants' perspectives.

### Data Collection Instruments

#### Descriptive Information Form

A six-item form developed by the researchers was used to collect basic sociodemographic information, including age, gender, grade level, parents' educational status, and perceived socioeconomic level.

#### Communication Skills Scale (CSS)

Communication skills were assessed using the Communication Skills Scale (CSS), originally developed by Reyes et al. (2012) and adapted into Turkish by Korkut, Owen, and Bugay (2014). The scale consists of 25 items rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). There are no reverse-scored items. Total scores range from 25 to 125, with higher scores indicating greater perceived communication competence. Çatalkaya (2019) examined the psychometric properties of the scale among middle school students and reported a Cronbach's alpha of .996. In the present study, the internal consistency coefficient was .87, indicating satisfactory reliability.

### Data Collection

#### Quantitative Data (Middle School Students)

Students' communication skills were assessed using the Communication Skills Scale (CSS) one week before the intervention (pretest) and two weeks after the program (posttest).

#### Qualitative Data (Nursing Students)

No scale-based measurement was administered to the nursing students at the end of the program. Instead, unstructured written reflections were collected to evaluate their experiences during the preparation and implementation process. Participants were invited to share their

perceptions regarding the strengths, challenges, and perceived contributions of the program.

#### *Data Analysis*

Data analysis was conducted in two phases: quantitative and qualitative.

#### Quantitative Analysis

Quantitative data were analyzed using Jamovi version 2.3. The Shapiro–Wilk test indicated that CSS total scores deviated significantly from normal distribution ( $p < .05$ ). Therefore, nonparametric statistical methods were used. Pretest–posttest differences were examined using the Wilcoxon signed-rank test, while gender and grade-level differences were analyzed using the Mann–Whitney U test. Effect sizes were calculated as  $r$  and interpreted using Cohen’s (1988) criteria ( $0.10 = \text{small}$ ,  $0.30 = \text{medium}$ ,  $0.50 = \text{large}$ ). Associations between variables were examined using Spearman’s rank correlation analysis. To further explore factors associated with posttest communication skills, a multiple linear regression analysis was conducted. Posttest CSS scores were entered as the dependent variable, while pretest CSS scores were included to control for baseline individual differences. Gender, grade level, and age were entered as covariates based on previous literature suggesting potential developmental and gender-related differences in communication skills.

With four predictors and a total sample of 81 participants, the analysis met the commonly recommended guideline of at least 10–15 observations per predictor variable, indicating an adequate sample size for regression analysis.

#### Qualitative Analysis

Qualitative data were analyzed using Braun and Clarke’s (2006) six-phase thematic analysis framework.

First, both researchers independently familiarized themselves with the dataset through repeated reading. Second, initial codes were generated inductively from the data without imposing predefined categories. Third, these codes were organized into candidate themes based on conceptual similarities. The themes were subsequently refined through iterative discussion

and comparison with the original data to ensure internal coherence and conceptual clarity.

Two researchers independently coded the dataset. Coding discrepancies were discussed until consensus was reached, thereby enhancing the credibility and rigor of the analysis. Six themes were identified (Table 5). Most feedback reflected positive evaluations of the program, particularly regarding personal development, communication awareness, teamwork, and professional motivation. However, a smaller subset of participants described initial challenges, including rehearsal-related stress, time demands, and temporary fatigue. To provide a balanced representation of participant experiences, these responses were grouped under a distinct theme (“Initial Challenges and Suggestions for Improvement”). Because the feedback session was brief and not designed as an in-depth qualitative inquiry, thematic saturation was not formally pursued. Therefore, the findings should be interpreted as descriptive and exploratory, providing insight into participants’ experiences rather than comprehensive qualitative generalization.

#### *Ethical Considerations*

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Istanbul Kartal District National Education Directorate (No. E-36391296-604.01-119364474) and the Ethics Committee of the Faculty of Social and Human Sciences, Istanbul Medeniyet University (Approval No. 2025/01). Prior to data collection and implementation of the intervention, written informed consent was obtained from parents or legal guardians of all participating students. Parents were provided with detailed information regarding the purpose, procedures, voluntary nature of participation, and confidentiality of the study. Students were included in the study only after parental consent had been secured. In addition, written assent was obtained from all students before participation. Students were informed that participation was voluntary and that they could withdraw from the study at any time without penalty. Confidentiality and anonymity were strictly maintained throughout the research process.

#### **Results**



This section presents the short-term effects of a single session of a creative drama-based service-learning program on the communication skills of middle school students, as well as the experiences of the nursing students who facilitated the program.

Table 1. Demographic Characteristics of the Participants (N=81).

| Characteristics                | n  | %    |
|--------------------------------|----|------|
| Gender                         |    |      |
| Female                         | 43 | 53.1 |
| Male                           | 38 | 46.9 |
| Age (years) M = 12.5, SD = 0.6 |    |      |
| 11                             | 3  | 3.7  |
| 12                             | 39 | 48.1 |
| 13                             | 37 | 45.6 |
| 14                             | 2  | 2.4  |
| Grade                          |    |      |
| 7th Grade                      | 42 | 51.9 |
| 8th Grade                      | 39 | 48.1 |
| Mother's Education             |    |      |
| Primary School                 | 13 | 16.0 |
| Secondary School               | 8  | 9.9  |
| High School                    | 34 | 42.0 |
| University                     | 22 | 27.2 |
| Graduate School                | 4  | 4.9  |
| Father's Education             |    |      |
| Primary School                 | 11 | 13.6 |
| Secondary School               | 11 | 13.6 |
| High School                    | 32 | 39.5 |
| University                     | 23 | 28.4 |
| Graduate School                | 4  | 4.9  |
| Socioeconomic status           |    |      |
| Low                            | 20 | 24.7 |
| Medium                         | 48 | 59.3 |
| High                           | 13 | 16.0 |

A total of 81 middle school students participated in the study. Of the participants, 53.1% were female (n=43) and 46.9% were male (n=38). The age range was 11–14 years, with 93.7% aged 12 or 13 (n=39 and n=37, respectively); the mean age was 12.5 (SD=0.6). In terms of grade level, 7th-grade students comprised 51.9% (n=42), while 8th-grade students accounted for 48.1% (n=39). Regarding parental education, 42.0% of mothers (n=34) and 39.5% of fathers (n=32) had completed high school; university graduates constituted 27.2% (n=22) of mothers and 28.4%

(n=23) of fathers. Socioeconomic status indicated that 59.3% belonged to the middle-income group (n=48), followed by 24.7% low-income (n=20) and 16.0% high-income (n=13) (Table 1).

As presented in Table 2, a statistically significant difference was observed between pre-test and post-test CSS scores ( $W = 751, p < .001$ ). Post-test scores ( $M = 99.7, SD = 18.8$ ) were higher than pre-test scores ( $M = 95.9, SD = 19.3$ ). Regarding gender, no statistically significant difference was found in pre-test scores between male and female students ( $U = 662, p = .144$ ). However, a statistically significant difference was observed in post-test scores ( $U = 546, p = .010$ ). Female students ( $M = 106.0, SD = 13.7$ ) had higher post-test scores than male students ( $M = 93.1, SD = 21.5$ ). Grade-level comparisons revealed no statistically significant differences between 7th- and 8th-grade students in either pre-test scores ( $U = 666, p = .148$ ) or post-test scores ( $U = 670, p = .159$ ).

As shown in Table 3, Spearman correlations were computed to examine the relationships among the study variables. A strong positive correlation was found between pre-test and post-test CSS scores ( $r = .72, p < .01$ ), indicating that students with higher initial communication skills tended to have higher scores after the program. Gender (female coded higher) showed a moderate positive correlation with post-test CSS scores ( $r = .29, p < .01$ ). In addition, a strong positive correlation was observed between age and grade level ( $r = .83, p < .01$ ). No other correlations were statistically significant.

As shown in Table 4, the overall regression model was statistically significant,  $F(4, 76) = 24.50, p < .001$ , accounting for 56% of the variance in post-test CSS scores ( $R^2 = .56$ , adjusted  $R^2 = .54$ ). Pre-test CSS score significantly predicted post-test CSS scores ( $B = 0.65, \beta = .67, p < .001$ ). Gender was also a significant predictor, with female students scoring higher on the post-test compared to males ( $B = 7.44, \beta = .40, p = .015$ ). Grade level ( $B = -1.00, \beta = -.16, p = .124$ ) and age ( $B = 1.46, \beta = .05, p = .622$ ) were not significant predictors.

The qualitative findings are based on a thematic analysis of written student feedback collected after the program. Six themes were identified through this process (Table 5). While the majority of responses reflected positive evaluations of the program, a smaller number of participants described initial challenges, such as time constraints, early rehearsal stress, and temporary fatigue. Rather than embedding these statements

within positive themes, they were grouped under a distinct theme (“Initial Challenges and Suggestions for Improvement”) to ensure a balanced and transparent representation of

participant experiences. Given the brief and exploratory nature of the feedback session, the qualitative findings should be interpreted as descriptive rather than exhaustive.

Table 2. Pre-Post, Gender, and Grade-Level Comparisons of CSS Scores (N = 81).

| Analysis                | Group     | n  | M     | SD   | Median | Test    | p      | r   |
|-------------------------|-----------|----|-------|------|--------|---------|--------|-----|
| Pre-Post Comparison     | Pre-Test  | 81 | 95.9  | 19.3 | 98.0   | W = 751 | < .001 | .44 |
|                         | Post-Test | 81 | 99.7  | 18.8 | 103.0  |         |        |     |
| Gender Comparisons      |           |    |       |      |        |         |        |     |
| Pre-Test                | Male      | 38 | 91.0  | 23.2 | 96.5   | U = 662 | .144   | .19 |
|                         | Female    | 43 | 100.0 | 14.1 | 99.0   |         |        |     |
| Post-Test               | Male      | 38 | 93.1  | 21.5 | 99.0   | U = 546 | .010   | .33 |
|                         | Female    | 43 | 106.0 | 13.7 | 106.0  |         |        |     |
| Grade-Level Differences |           |    |       |      |        |         |        |     |
| Pre-Test                | 7th Grade | 42 | 97.0  | 22.7 | 103.0  | U = 666 | .148   | .19 |
|                         | 8th Grade | 39 | 94.7  | 15.1 | 95.0   |         |        |     |
| Post-Test               | 7th Grade | 42 | 101.7 | 20.0 | 106.0  | U = 670 | .159   | .18 |
|                         | 8th Grade | 39 | 97.6  | 17.3 | 99.0   |         |        |     |

Legend. W = Wilcoxon signed-rank test; U = Mann-Whitney U test; r = effect size.

Table 3. Correlations Among Study Variables (N = 81).

| Variable           | 1 | 2     | 3   | 4    | 5     |
|--------------------|---|-------|-----|------|-------|
| 1. Age             | - | .83** | .17 | -.11 | -.08  |
| 2. Grade (7th)     | - | -     | .18 | -.15 | -.17  |
| 3. Gender (Female) | - | -     | -   | .16  | .29** |
| 4. Pre-Test CSS    | - | -     | -   | -    | .72** |
| 5. Post-Test CSS   | - | -     | -   | -    | -     |

Note. \*\*p < .01.

Table 4. Multiple Linear Regression Predicting Post-Test CSS Scores (N = 81).

| Predictor       | B     | SE    | $\beta$ | t     | P     | 95% CI (LL, UL) |
|-----------------|-------|-------|---------|-------|-------|-----------------|
| Constant        | 25.58 | 33.81 | -       | 0.76  | .452  | (-41.76, 92.93) |
| Pre-Test CSS    | 0.65  | 0.08  | .67     | 8.47  | <.001 | (0.49, 0.80)    |
| Gender (Female) | 7.44  | 2.98  | .40     | 2.50  | .015  | (1.51, 13.37)   |
| Grade (7th)     | -1.00 | 0.64  | -.16    | -1.56 | .124  | (-2.28, 0.28)   |
| Age             | 1.46  | 2.96  | .05     | 0.50  | .622  | (-4.42, 7.35)   |

Note.  $R^2 = .56$ ; adjusted  $R^2 = .54$ ,  $F(4, 76) = 24.50$ ,  $p < .001$ . CSS = Communication Skills Scale.

Table 5. Themes and Representative Statements Identified from Nursing Students' Feedback After the Program (N = 60).

| Theme                                                 | n  | %    | Representative Statement                                                                                                                              |
|-------------------------------------------------------|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Personal Development and Increased Self-Confidence | 38 | 63.3 | “My self-confidence has increased, and speaking in front of a group no longer scares me.”                                                             |
| 2. Increased Awareness of Communication Skills        | 34 | 56.7 | “Seeing my communication mistakes on stage was eye-opening; now, I consciously use ‘I-statements.’”                                                   |
| 3. Reduction in Stage/Performance Anxiety             | 29 | 48.3 | “The first rehearsal was stressful, but by the end of the performance, my anxiety had decreased significantly.”                                       |
| 4. Development of Teamwork Skills                     | 26 | 43.3 | “Working harmoniously with a group of ten gave me a real sense of team spirit.”                                                                       |
| 5. Increased Professional Motivation and Empathy      | 31 | 51.7 | “Through this project, I realized that nursing is not just about providing treatment; its true strength lies in effective communication and empathy.” |
| 6. Initial Challenges and Suggestions for Improvement | 9  | 15.0 | “At the beginning, I felt nervous about acting in front of others, and I would have preferred more rehearsal time.”                                   |

## Discussion

This study examined the short-term effects of a creative drama-based service-learning program on the communication skills of middle school students and explored the experiences of nursing students who implemented the program. Although the single-group pretest–posttest design does not permit causal inference, the observed increase in communication skills scores suggests that drama-based educational activities may contribute to the development of communication competencies among adolescents.

A statistically significant increase was observed in the Communication Skills Scale (CSS) scores of the middle school students. This finding is consistent with previous studies indicating that creative drama activities can support communication skills, expressive abilities, and interpersonal interaction among young learners (Frydman & Mayor, 2024; Kyle et al., 2023; Kesgin & Tok, 2023; Conradty & Bogner, 2020). Drama-based learning environments typically promote experiential engagement, perspective taking, and emotional expression, which are key components of effective interpersonal communication.

However, the literature does not present a fully consistent picture regarding the effectiveness of drama-based interventions. For instance, Podlozny's (2000) meta-analysis reported considerable variability in the impact of drama activities on social skill development, while Lee et al. (2015) found no significant short-term improvements in communication outcomes following a drama-based intervention. These inconsistencies suggest that the effectiveness of such programs may depend on factors such as intervention duration, implementation intensity, participant characteristics, and program structure.

Indeed, previous research generally indicates that longer-term and regularly implemented drama programs tend to produce more robust and sustainable outcomes (Podlozny, 2000; Batdi & Elaldi, 2020). For example, Wright (2006) reported that improvements in social skills obtained from a twelve-week drama program were largely retained six months after the intervention. In contrast, short-term or single-session interventions often produce smaller effects and may be influenced by external factors such as maturation or familiarity with the measurement tool (Arveklev et al., 2018; Frydman & Mayor, 2023).

Despite the brief duration of the intervention in the present study, a significant increase in communication skills was observed. One possible explanation may be the intensive and focused structure of the session. The performances were designed to present both ineffective and effective communication scenarios, allowing participants to compare contrasting behaviors. Such contrast-based learning may facilitate rapid cognitive and behavioral insight. In addition, the interactive and engaging nature of drama activities may have increased participants' motivation and attention, which can enhance short-term learning outcomes.

Gender differences observed in the study are broadly consistent with findings reported in the literature. Female students demonstrated significantly higher posttest communication skills scores compared to male students. Previous research has frequently reported that female adolescents tend to score higher in communication-related domains such as empathy, emotional awareness, and verbal expression (Kesgin & Tok, 2023). Nevertheless, some studies have found no gender differences in drama-based communication interventions (Joronen et al., 2012; Conradty & Bogner, 2020). These inconsistent findings may be related to cultural factors, differences in engagement with expressive activities, or variations in measurement instruments.

No significant differences were found according to age or grade level. This finding may be explained by the relatively narrow age range of the participants (12–13 years), which likely limited developmental variability in communication skills. Additionally, the short and intensive nature of the intervention may have produced a relatively uniform effect across participants. Similar findings were reported by Wattanawongwan et al. (2023), who observed no significant age-related differences in adolescents participating in communication-focused interventions.

Regression analyses indicated that baseline communication skills were the strongest predictor of posttest scores. This finding suggests that communication skills may demonstrate a degree of stability over time while still allowing room for improvement through educational interventions. Previous research has similarly shown that baseline competence often accounts for a substantial portion of variance in post-intervention outcomes (Dziadkowiec, 2023).

The qualitative findings provided additional

insight into the educational value of the program for the nursing students who implemented the intervention. Students reported gains in self-confidence, communication awareness, teamwork, empathy, and professional motivation. These findings align with studies emphasizing the reciprocal benefits of service-learning approaches, which simultaneously support community-based learning outcomes and student professional development (Kyle et al., 2023; Kesgin & Tok, 2023). The experience of designing and performing communication scenarios appears to have facilitated experiential learning, allowing nursing students to translate theoretical communication concepts into practice.

Overall, the findings suggest that drama-based service-learning activities may provide a meaningful experiential learning environment for both adolescents and nursing students. Such programs may promote communication awareness, reflective learning, and interpersonal engagement across educational levels.

#### *Limitations and Strengths*

This study has several limitations that should be considered when interpreting the findings. First, the use of a single-group pretest-posttest design without a control group limits the ability to attribute observed changes solely to the intervention. Second, the sample was drawn from a single public middle school in Istanbul, which may limit the generalizability of the results. Third, the intervention consisted of a single 120-minute session, and therefore the findings reflect only short-term outcomes. Finally, the study did not include long-term follow-up measurements to evaluate the sustainability of the observed improvements.

Despite these limitations, the study also has several strengths. It represents one of the few studies in Turkey examining the outcomes of a creative drama-based service-learning program for both adolescent participants and nursing students simultaneously. By integrating quantitative data from middle school students with qualitative reflections from nursing students, the study provides a more comprehensive understanding of the educational process. Additionally, the program combined creative drama with service-learning principles, offering an innovative and potentially replicable model for communication skills education in both

secondary school and nursing education contexts.

#### *Future Directions*

Future research should employ randomized controlled or quasi-experimental designs with comparison groups to better evaluate the causal effects of drama-based communication interventions. Implementing the program across multiple sessions and including follow-up assessments several months after the intervention would provide stronger evidence regarding the durability of the observed effects. In addition, the professional development outcomes of nursing students could be evaluated using standardized quantitative instruments. Replicating the intervention in schools with different socioeconomic backgrounds and in different regions would further enhance the generalizability of the findings.

#### **Conclusion**

The findings of this study suggest that a creative drama-based service-learning session may contribute to short-term improvements in communication skills among middle school students while simultaneously providing nursing students with valuable experiential learning opportunities. These results highlight the potential of interdisciplinary and experiential educational approaches to support communication skill development across different educational levels.

#### *Declaration of Generative AI Use in the Writing Process*

During the preparation of this manuscript, the authors used ChatGPT to support language refinement, improve clarity, and enhance the overall flow of the text. The tool was used solely for editing and paraphrasing purposes, and no analytical, interpretive, or content-generating functions were delegated to the AI.

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# Evolving Competences of Nurse Mentors in Clinical Education: A Mini-Review of Recent International Evidence

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**Correspondence:** Yari Longobucco – Department of Health Sciences, University of Florence, Florence, Italy; Mail: [yari.longobucco@unifi.it](mailto:yari.longobucco@unifi.it)

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**Gian Domenico Giusti<sup>1,2</sup>, Stefano Bambi<sup>3</sup>, Yari Longobucco<sup>3</sup>, Rocco Mazzotta<sup>2</sup>**

<sup>1</sup> *Formazione e Qualità, Azienda Ospedaliera di Perugia, Perugia, Italy*

<sup>2</sup> *Department of Biomedicine and Prevention, University of Tor Vergata, Rome, Italy*

<sup>3</sup> *Department of Health Sciences, University of Florence, Florence, Italy*

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## Abstract

**Introduction.** Clinical mentoring plays a crucial role in nursing education, contributing to the development of students' technical, relational, and critical skills. Mentor competence is a key determinant of the quality of the clinical learning experience. In this perspective, the aim of this work is to synthesize evidence on nurse mentors' self-assessed competence, with particular focus on strengths, areas for improvement, and effective educational interventions.

**Methods.** This mini-review was based on the updated literature search (PubMed, CINAHL, Scopus) covering the period 2020–2025. Quantitative and mixed-method studies conducted in real clinical settings, with direct measurement of mentors' self-perceived competence, were included.

**Results.** Pedagogical and personal competencies were perceived as strong, whereas organizational skills were less developed. Structured educational programs significantly improved self-assessed competence scores and observed performance. Intercultural competence emerged as a critical area.

**Discussion.** Improving mentors' competence requires an integrated approach that combines continuous training, standardized assessment tools, the development of intercultural skills, and organizational support.

**Keywords:** Clinical Mentoring, Nursing Education, Competence, Self-Assessment, Narrative Review

## Introduction

Clinical mentoring is a vital part of nursing education as it helps students to integrate theoretical learning with professional practice. It supports the development of clinical, communication and reflective skills (Pramila-Savukoski et al., 2020; Papastavrou et al., 2016; Saarikoski et al., 2013).

However, in the literature the terms mentoring and tutoring are sometimes used interchangeably, despite referring to distinct educational approaches (Tuomikoski et al. 2018). Tutoring typically focuses on academic support and task oriented supervision, whereas clinical mentoring is a broader developmental process that involves relational, reflective and psychosocial support. In this article, the concept of clinical mentoring is adopted in its wider meaning, referring to an intentional, structured and time limited relationship aimed at supporting professional growth and integration into clinical practice (Mínguez Moreno et al., 2023; Chen & Lou, 2014). This clarification ensures conceptual alignment throughout the manuscript and distinguishes mentoring from narrower forms of academic tutoring.

The concept of mentoring has ancient origins, dating back to classical Greece. In nursing, it formally emerged in the United Kingdom in the 1960s as a strategy to support trainee professionals (Mínguez Moreno et al., 2023). Today, mentoring is understood as an intentional, structured, and temporary relationship in which an experienced professional (the mentor) supports a less experienced professional (the mentee), helping them with not only the transfer of knowledge, but also social and professional integration (Mínguez Moreno et al., 2023; Chen & Lou, 2014).

In university nursing education, mentors have taken on an increasingly central role, particularly given the reduced presence of university lecturers in wards (Warne et al., 2010; Jokelainen et al., 2011). Directive 2013/55/EU stipulates that at least 50% of training must take place in clinical settings, which makes it essential to have competent and motivated individuals available to act as mentors (European Parliament, 2013).

The literature emphasises that effective mentoring can promote student learning, reduce

anxiety and stress, boost professional confidence and support the transition to clinical practice (Huybrecht et al., 2011; Gularte-Rinaldo et al., 2022; Tuomikoski et al., 2020). Furthermore, well-structured mentoring programmes have been shown to improve the retention of recent graduates, reduce staff turnover, and promote a sustainable organisational culture (Chen & Lou, 2014; Haggerty et al., 2013; WHO, 2020).

Mentoring also directly impacts the quality of care by providing constructive feedback and clinical supervision to reduce variability in care and promote patient safety (Mínguez Moreno et al., 2023; Jokelainen et al., 2013).

In this context, Pramila-Savukoski et al. (2020) systematic review analysed the self-assessed skills of nursing mentors in depth, identifying their strengths and areas for improvement. The aim of this mini-review is to update this evidence by including studies published between 2020 and 2025. The review will outline emerging areas of competence and propose operational recommendations to strengthen the training and support of clinical mentors.

## Methods and Materials

This mini-review included international studies addressing nursing mentoring, with a focus on programmes designed to strengthen, evaluate or support clinical mentoring in real clinical environments, rather than on students themselves. The literature review was carried out independently by two researchers, following Griffith's (2002) methodological recommendations and adopting a two-stage process.

During the first exploratory phase, MEDLINE and CINAHL databases were searched to identify the most relevant indexed terms (Aromataris & Riitano, 2014). In the subsequent phase, these terms and related keywords were used to perform a systematic search across PubMed (MEDLINE), CINAHL (EBSCO Host), and Scopus, which were deemed the most relevant databases for the topic (Aromataris & Riitano, 2014). To enhance methodological transparency and replicability, the complete search strategy—including database specific strings—is presented in Table 1. Grey literature was not considered for inclusion.



Table 1. Terms used to search the electronic databases.

| Search Terms |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CINAHL       | (MH "Preceptorship" OR MH "Mentors" OR preceptor*[TI] OR mentor*[TI] OR supervis*[TI]) AND (MH "Students, Nursing" OR "nursing student"[TI]) AND ("clinical learning environment"[TI] OR "clinical placement"[TI] OR "clinical training"[TI]) AND (competenc*[TI] OR skill*[TI] OR performance[TI]) NOT MH "Qualitative Studies"<br><u>Filters:</u> English, Italian Languages; Peer Reviewed, Exclude MEDLINE records, Publication year 2020-2025                                                                                                                                      |
| PubMed       | ( mentor*[Title/Abstract] OR supervis*[Title/Abstract] OR preceptor*[Title/Abstract] ) AND ( "nursing student"[Title/Abstract] OR "nursing students"[Title/Abstract] ) AND ( "clinical learning environment"[Title/Abstract] OR "clinical education"[Title/Abstract] OR "clinical teaching"[Title/Abstract] OR "clinical placement"[Title/Abstract] OR "clinical training"[Title/Abstract] ) AND ( competence[Title/Abstract] OR skill*[Title/Abstract] OR performance[Title/Abstract] )<br><u>Filters:</u> English, Italian Languages; Publication date from 2020/01/01 to 2025/05/31; |
| Scopus       | TITLE-ABS-KEY ( mentor* OR supervis* OR preceptor* ) AND TITLE-ABS-KEY ( "nursing student" OR "nursing students" OR nurs* W/1 student* ) AND TITLE-ABS-KEY ( "clinical learning environment" OR "clinical placement" OR "clinical placements" OR "clinical rotation" OR "clinical training" ) AND TITLE-ABS-KEY ( competenc* OR skill* OR performance ) AND NOT TITLE-ABS-KEY ( "qualitative study" OR "qualitative research" )<br><u>Filters:</u> English, Italian Languages; Peer Reviewed original studies, Publication year 2020-2025, Nursing subject area                         |

**Caption:** Search fields and Boolean operators used across the three databases.

Studies were included if they met the following conditions: they employed quantitative or mixed methods designs, were conducted in real clinical settings, focused explicitly on mentors' self perceived competence, and were published in English between January 2020 and May 2025. Studies were excluded if they relied solely on qualitative designs, were carried out in simulated learning environments, or did not use validated measurement instruments to assess mentoring competence.

It is important to clarify that these inclusion criteria refer to the methodological approach (quantitative or mixed methods). By contrast, the study design categories used in the Results section (e.g., cross sectional, longitudinal, quasi experimental) describe temporal or structural characteristics and therefore operate on a different level. This distinction explains why both classifications appear in the manuscript without contradiction, purely qualitative studies were excluded.

The search yielded a total of 120 records. After removing duplicates (n = 75), 45 records were screened by title and abstract, and 15 were excluded for not meeting the inclusion criteria (e.g., qualitative-only design, non validated assessment tools, non clinical settings). A total of 30 full text articles were assessed for eligibility, of which 25 were excluded due to inadequate methodology or misalignment with mentoring competence. Ultimately, 5 studies were included in the final synthesis. This narrative

format is consistent with the concise nature of mini-reviews while ensuring methodological transparency.

In addition, further eligible studies were identified through a manual search of the reference lists of the selected papers.

For each included study, the following data were extracted: year of publication, country, study design, sample size, measurement instruments, any educational or training interventions, and main findings.

Extracted data were analysed through a descriptive synthesis. Two independent researchers compared and categorised the studies based on recurring competence domains and methodological features, resolving discrepancies through discussion. Due to the heterogeneity of instruments and outcomes, no meta-analysis was performed. Results were therefore synthesised narratively and presented in tabular form. Terminology describing methodological approaches and study designs has been harmonised across Methods and Results to ensure internal consistency.

## Results

A total of five studies met the inclusion criteria and were included in this mini-review. These studies were conducted between 2020 and 2025 in Europe, North America, Africa and the Middle East, and employed quantitative or

mixed-methods designs, in accordance with the eligibility criteria. A descriptive overview of the studies—covering geographical context, design, sample size and measurement instruments—is summarised in Table 2.

Overall, the included studies consistently demonstrated that clinical mentoring influences multiple domains of mentor competence, confirming both the complexity and the multifaceted nature of the role. Across settings, mentors tended to report high levels of perceived pedagogical and interpersonal competence, while organisational and intercultural dimensions appeared comparatively less

developed. The findings detailed below provide a structured synthesis of these patterns.

More recent evidence (2020–2025) builds on this foundation and extends the understanding of mentor competences (Table 2). Tuomikoski et al. (2020) demonstrated that structured training programmes significantly improve mentors' skills, particularly regarding feedback provision, student-centred evaluation, and support for learning processes. These improvements were observed across nearly all competence subdomains, indicating that educational interventions can generate both broad and deep enhancements in mentoring capacity.

Table 2. Main studies on nurse mentors' self-assessed competences (2020–2025).

| Author(s)<br>(year)              | Country             | Design             | Sample                             | Instrument                    | Intervention<br>/ Focus     | Key findings                                                                                                                                       |
|----------------------------------|---------------------|--------------------|------------------------------------|-------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Hagrass et al.<br>(2023)         | Egypt               | Quasi-experimental | n = 30<br>mentors +<br>60 students | MCI,<br>performance<br>tools  | Educational<br>program      | Significant<br>improvements in<br>knowledge, competence<br>and performance;<br>strongest gains in<br>feedback, evaluation,<br>conflict management. |
| Tuomikoski et<br>al. (2020)      | Finland             | Quasi-experimental | n = 120<br>mentors                 | MCA-21 /<br>MCI               | Mentor<br>training          | Marked improvements<br>in nearly all mentoring<br>domains, especially<br>workplace practices<br>and student-centred<br>evaluation.                 |
| Gularte-Rinaldo<br>et al. (2023) | USA                 | Longitudinal       | n = 154<br>mentees                 | Surveys,<br>retention<br>data | Be1Support1<br>Program      | Positive effects on<br>retention, confidence,<br>problem-solving,<br>communication and<br>transition to practice.                                  |
| Luukkonen et<br>al. (2023)       | EU (4<br>countries) | Cross-sectional    | n = 270<br>mentors                 | MCCI + MCI                    | Intercultural<br>competence | High awareness but<br>weaker interaction/<br>safety; cultural<br>competence correlated<br>with mentoring<br>competence.                            |
| Narayanan et al.<br>(2025)       | Bahrain             | Cross-sectional    | n = 201<br>students                | Mentor<br>Behaviour<br>Tool   | Mentor<br>behaviours        | High scores in learning<br>facilitation, professional<br>development and<br>psychosocial support;<br>strongest in emotional<br>support.            |

**Legend:** MCI = Mentor Competence Instrument; MCCI = Mentors' Cultural Competence Instrument; MCA 21 = Mentor Competence Assessment Tool; Be1Support1 = Structured mentorship programme for newly graduated nurses.

Similarly, Hagrass et al. (2023) reported substantial gains in both self-assessed competence and observed performance after a structured educational programme. The most pronounced improvements concerned feedback quality, conflict management, and evaluation practices, suggesting that targeted training can strengthen complex relational and pedagogical

skills that are essential in clinical supervision.

In the United States, Gularte-Rinaldo et al. (2023) highlighted the long-term benefits of mentoring, including greater professional confidence, improved problem-solving skills, enhanced communication, and higher retention rates among newly graduated nurses. This study provides important evidence of the sustained

impact of mentorship over time, emphasising that its effects are not limited to the educational phase but extend into early professional practice.

Luukkonen et al. (2023), in a large international study, underscored the growing importance of intercultural competence, noting that mentors showed high levels of cultural awareness but limited operational ability to support international students. The study demonstrated that while attitudinal aspects of intercultural competence are generally strong, practical skills—such as adapting communication to linguistic needs or managing cultural misunderstandings—remain areas of vulnerability.

Finally, Narayanan et al. (2025) documented discrepancies between mentors' and students' perceptions, especially regarding the quality of feedback and emotional support. This

misalignment highlights the need to employ multi-perspective assessment tools, as self-reported competence alone may not fully capture the quality or consistency of mentoring interactions experienced by students.

The competences identified can be summarised into four macro-areas (Table 3). The established domains include pedagogical skills (e.g. feedback, reflection, clear objectives), personal qualities (motivation, resilience, professional values), and organisational abilities (time and resource management, collaboration with universities). More recent contributions have added a fourth dimension: intercultural competence, which refers to the ability to support students from diverse cultural and linguistic backgrounds through adapted communication and inclusive practices.

Table 3. Macro-areas of nurse mentors' competence and main evidence.

| Macro-area                | Description                                                       | Practical examples                                                           | Evidence                                                                                                 |
|---------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Pedagogical competence    | Ability to facilitate and structure clinical learning             | Improved feedback, evaluation, learning support, student centred supervision | Hagrass et al. (2023); Tuomikoski et al. (2020); Gualarte Rinaldo et al. (2023); Narayanan et al. (2025) |
| Personal competence       | Relational, motivational, emotional and professional qualities    | Increase in confidence, communication, psychosocial support, problem solving | Gualarte Rinaldo et al. (2023); Narayanan et al. (2025); Hagrass et al. (2023)                           |
| Organisational competence | Ability to manage resources, workload, coordination               | Improvements in workplace mentoring practices and conflict management        | Tuomikoski et al. (2020); Hagrass et al. (2023)                                                          |
| Intercultural competence  | Ability to support culturally and linguistically diverse students | High cultural awareness but difficulty in communication, safety, interaction | Luukkonen et al. (2023)                                                                                  |

Across the included studies, observational designs represented approximately half of the evidence base, followed by quasi-experimental studies and one systematic review. This distribution confirms the predominance of descriptive approaches in current research and highlights the need for more robust experimental designs in future investigations. Despite this limitation, the convergence of findings across diverse methodologies strengthens the validity of the identified competence areas and provides a coherent analytical framework for the updated mini-review.

In summary, the expanded narrative highlights consistent cross-study patterns, clarifies the contribution of each study to the four competence domains, and provides a more explicit link between the tabular data and the interpretive synthesis.

## Discussion

The present mini-review builds upon and updates the systematic review by Pramila-Savukoski et al. (2020), which analysed sixteen quantitative studies and identified three core domains of nurse mentors' self-assessed competence: pedagogical, personal and organisational. Their review demonstrated that mentors consistently perceived pedagogical and interpersonal skills—such as providing feedback, motivating students, and fostering reflection—as their strongest areas, while organisational competences remained comparatively weaker due to workload constraints, lack of protected time, and insufficient institutional support. This prior evidence provides a crucial benchmark against which the findings of the present review can be interpreted and highlights the relevance

of updating the knowledge base, particularly in light of recent studies that have expanded the conceptualisation of mentor competence and introduced new domains, such as intercultural competence and observed performance outcomes (Papastavrou et al., 2016; Saarikoski et al., 2013).

Supporting evidence from earlier international studies reinforces this trend. For instance, Chen and Lou (2014) demonstrated the positive effect of mentoring programmes on new graduates' retention, while Huybrecht et al. (2011) showed that mentoring reduces students' anxiety and stress. Jokelainen et al. (2011, 2013) emphasised the importance of collaboration between universities and clinical settings for effective mentoring, and Luhanga et al. (2010) described the characteristics of preceptorship as a key determinant of clinical safety and learning quality. These findings provide an essential contextual background and further support the interpretation of the updated evidence included in this review.

The findings of this mini-review confirm the multidimensional nature of nurse mentors' competence, reinforcing the evidence that the pedagogical, personal and organisational dimensions are central to effective clinical mentoring. The systematic review by Pramila-Savukoski et al. (2020) was instrumental in categorising these domains and highlighting that mentors tend to rate their pedagogical and interpersonal skills more highly than their organisational and structural abilities. This imbalance highlights a long-standing discrepancy between individual motivation and institutional support, a finding that was initially observed in early European studies (Warne et al., 2010; Jokelainen et al., 2013).

Subsequent research has refined and expanded this framework. For example, Tuomikoski et al. (2018) identified three distinct competence profiles among Finnish nurse mentors, demonstrating the crucial role of professional experience and targeted education in shaping mentoring efficacy. Similarly, Mikkonen et al. (2020) proposed an evidence-based mentoring model derived from five European countries (Finland, Italy, Lithuania, Slovenia and Spain), which emphasised the importance of contextual adaptation and interprofessional collaboration. Together, these studies point to the need for structured mentoring education and organisational strategies that promote consistent

mentoring quality across different healthcare systems.

Recent quasi-experimental and longitudinal research (Tuomikoski et al., 2020; Hagrass et al., 2023; Gualarte-Rinaldo et al., 2022) has provided empirical evidence of the effectiveness of formal training programmes. Such programmes have been shown to significantly enhance mentors' perceived and observed competencies, particularly with regard to providing feedback, communicating, and engaging students. However, self-assessment bias (Eva & Regehr, 2005) means that multi-perspective evaluation tools must be implemented, integrating mentors' self-reports with student feedback and external observation.

A recurring theme is intercultural competence, which is increasingly recognised as a vital aspect of mentoring in today's globalised educational context. Luukkonen et al. (2023) found that, while mentors have good cultural awareness, they often lack practical strategies for inclusive and culturally responsive supervision. Curtis et al. (2019) echo this finding, arguing that developing cultural safety, rather than mere cultural knowledge, represents a crucial step towards health equity and effective international education. Meanwhile, the pivotal role of tutors in fostering cultural competence among nursing students and facilitating the establishment of inclusive clinical environments was emphasised by Giusti and Mazzotta (2025).

The results of this review also corroborate the findings of Mínguez Moreno et al. (2023), who defined mentoring as an educational and organisational process. As well as its pedagogical role, mentoring fosters staff retention, professional satisfaction and the development of a supportive institutional culture. These systemic effects are particularly pertinent in light of the current global nursing shortage, as effective mentoring contributes to both individual growth and workforce sustainability (WHO, 2020).

Finally, Narayanan et al. (2025) revealed discrepancies in perception between mentors and students regarding the emotional and instructional components of mentoring. These discrepancies emphasise the relational complexity of the mentoring process and highlight the importance of emotional intelligence, reflective practice and institutional recognition in maintaining mentoring quality.

In summary, synthesising recent evidence



reveals that developing mentor competence requires an integrated strategy combining formal education, intercultural awareness, validated assessment tools and strong organisational support. Taking a simultaneous approach to addressing these dimensions appears to be the most effective way of improving the quality of clinical education and strengthening the professional identity of future nurses.

### *Limitations*

This mini-review has several limitations that should be considered when interpreting the results. Firstly, as most of the included studies are observational or quasi-experimental, it is difficult to establish solid causal relationships and the evidence is not easily generalisable. Furthermore, the marked heterogeneity of the measurement tools used to assess mentor competence hinders direct comparison between different studies and makes quantitative meta-analyses difficult to perform.

Another critical issue is the potential for self-assessment bias: many studies are based on questionnaires completed by the mentors themselves, which may lead to an overestimation of their actual skills, as has been noted in previous literature on self-assessment bias (Eva & Regehr, 2005).

Geographically, most of the research included in this review was conducted in European and North American contexts (Warne et al., 2010; Jokelainen et al., 2011; Chen & Lou, 2014; Gualarte Rinaldo et al., 2023), with limited representation from other regions or culturally diverse settings. This geographical imbalance may limit the generalisability of the findings to healthcare systems with different organisational structures or cultural profiles.

Finally, few studies have assessed the long term impact of mentoring on both students and organisations (Haggerty et al., 2013; WHO, 2020), leaving uncertainty regarding the sustainability of mentoring benefits over time.

### **Conclusions**

Clinical mentoring is confirmed as a complex process requiring multidimensional skills and adequate organisational support to be effective. The analysed evidence highlights the importance

of implementing standardised training programmes for mentors to ensure consistent preparation and support professional growth. At the same time, adopting validated, multi-perspective assessment tools appears crucial to overcoming the limitations of self-assessment bias and providing a more accurate picture of actual skills.

Particular attention must be paid to developing intercultural skills, which are becoming increasingly relevant in training and care contexts that are characterised by high levels of cultural and linguistic diversity. Furthermore, institutional recognition of the mentor's role, accompanied by concrete organisational support, is essential for ensuring the long-term sustainability and effectiveness of mentoring programmes.

In summary, an integrated approach combining individual, educational, and organisational interventions is the most promising strategy for improving the quality of clinical training, promoting student satisfaction, and supporting the retention of nursing staff, thereby contributing to the development of more resilient and sustainable healthcare systems.

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