

The Impact of Nursing Education Innovation on the Quality of Care for Elderly Hospitalized Patients: A Systematic Review Based on Student Competency Development

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Aim: To evaluate the effectiveness of emerging nursing education interventions in improving nursing students' competency in caring for elderly inpatients, and their subsequent indirect impact on the quality of life and psychological well-being of elderly patients.

Study Design: A systematic review of experimental and quasi-experimental studies. Databases sources Cochrane Library, Pubmed, CNKI, Eric; Google Scholar was used to search for grey literature and the reference lists of the retrieved papers.

Review Methods: A research protocol was developed according to the PRISMA-P guidelines. Two reviewers conducted the selection process. The "JBI Critical Appraisal Checklist" was used to check the quality of the selected studies.

Results: We included 15 studies: 3 multicenter randomized controlled trials and 12 quasi-experimental studies. Among them, 9 studies demonstrated significant advantages of nursing education interventions in alleviating patient symptoms, improving quality of life, and enhancing psychological indicators. However, when compared with other nursing intervention methods, the results showed diversity. 7 studies highlighted the effectiveness of nursing education interventions in enhancing family caregivers' nursing capabilities and patients' and families' autonomous learning abilities. Regarding problem-solving and critical thinking skills, the results were inconsistent. Nursing education interventions promoted family caregiver engagement but did not appear to be directly linked to better caregiving abilities.

Conclusion: Innovative nursing education reliably enhances student competencies and offers promise for indirectly improving elderly inpatients' quality of life and psychological well-being, though direct evidence remains limited and further research is needed.

Keywords: nursing education, quality of life, psychological, elderly, inpatients

Introduction

Population aging is a major global issue and a significant challenge for China at present. Currently, the number of elderly people aged 60 and above in China is continuously increasing, and it is projected that by 2030, China will become the country with the highest degree of population aging in the world.^{1,2} Against the backdrop of a severe aging trend, China's elderly care services are rapidly developing, and research on the demand for related care services is on the rise. Previous studies have shown that elderly patients, due to the variety of chronic diseases they suffer from, long disease courses, slow recovery, high medical expenses, and often accompanied by emotional issues such as loneliness and pessimism, have diverse inpatient care needs.³⁻⁵ At the same time, elderly individuals expect nursing services to assist in their recovery and reintegration into society, presenting characteristics of multi-layered care needs, which differ significantly from those of middle-aged and young patients.⁶ Elderly care refers to an integrated service system aimed at meeting the health needs of older adults throughout their entire life cycle, combining physical care, psychological support, promotion of social participation, and dignity preservation. Its core lies in enhancing the quality of life and dignity of older adults

through personalized, continuous care. However, current elderly care faces serious challenges—uneven professional competence among caregivers and fragmented services—leading to older patients frequently encountering a situation of “care without quality,” particularly in hospital settings where the dependence on professional care is high and the gap between demand and quality of care supply is especially pronounced.

Under this context, the relationship between student nursing education—the source of future nursing personnel—and the quality of geriatric care urgently needs clarification.^{7–9} Nursing students are potential providers of geriatric care, and specialized geriatric education they receive during their studies directly shapes their clinical competence. Research indicates that systematic geriatric education significantly enhances students’ understanding of age-related diseases, humanistic care awareness, and emergency response capabilities. These competencies serve as key mediators in improving the care experience for elderly patients and optimizing nursing outcomes.¹⁰ However, existing research mostly focuses on the one-way impact of education on student competencies, with limited exploration of its subsequent effects on patient care quality.

Traditional nursing education often relies on lectures and routine clinical practice, while innovative approaches incorporate digital technologies (eg, simulation, virtual reality, online modules) and problem-based learning. These innovations have shown potential to better prepare students for complex geriatric scenarios. This systematic review addresses the underexplored “education → competency → patient outcome” chain, providing empirical guidance for curriculum optimization in an aging society.

Methods

Definition of the Research Question and the Study Protocol

To identify keywords and develop an appropriate research strategy to achieve the objectives of this study, we used the PICOS method to construct the research question and developed a systematic review protocol based on the PRISMA-P guidelines.

P: Students at all levels of nursing.

I: Emerging nursing teaching methods.

C: Traditional nursing teaching methods.

O: Primary outcomes: elderly inpatient outcomes (quality of life, psychological status) Secondary outcomes: student outcomes (knowledge, skills, attitudes, competence).

S: Experimental and quasi-experimental studies.

Eligibility Criteria

Inclusion Criteria

Population: The study subjects encompass nursing students at various levels, hailing from diverse countries and regions.

Intervention: Emerging Teaching Methods for Caregivers of Hospitalized Elderly Patients.

Comparison: Traditional nursing teaching methods.

Outcomes: The research outcome focused on the learning outcomes and application levels of nursing students, including the effectiveness of nursing interventions on the quality of life and psychological state of elderly inpatients.

Study types: Experimental and quasi-experimental studies.

Exclusion Criteria

Literature and conference papers for which the full text cannot be obtained.

Reviews, systematic reviews, and other secondary studies.

Duplicate publications.

Research Proposal, Guidelines, Opinions, and Policy Documents.

Search Strategies and Study Selection Process

PubMed, MEDLINE, CINAHL, Web of Science and Cochrane Library databases were searched to retrieve primary studies. The database, taking PubMed as an example, employs a combination of free text and subject headings for searching: (students, nursing [MeSH Terms] OR nursing student* [Title/Abstract] OR nursing graduate* [Title/Abstract] OR nursing undergraduate* [Title/Abstract] OR nursing postgraduate* [Title/Abstract] OR nursing pupil* [Title/Abstract] OR nurse*pupil* [Title/Abstract]) AND (elderly inpatients [MeSH Terms] OR older inpatients [Title/Abstract] OR inpatients*65* [Title/Abstract] OR aged inpatients [Title/Abstract] OR chronic inpatients [Title/Abstract]) AND (quality of life[Title/Abstract] OR quality-of-life [Title/Abstract] OR quality life [Title/Abstract] OR quality*life* [Title/Abstract] OR SF-36 [Title/Abstract] OR The Short-Form 36 [Title/Abstract]) AND (Psychological Status[MeSH Terms] OR SDS*SAS* [Title/Abstract] OR depression [Title/Abstract]). The retrieval time limit is from the establishment of the database to July 1, 2025.

Literature Screening

Duplicate bibliographic entries retrieved were removed. Two trained researchers independently conducted an initial screening by reading the titles and abstracts of the literature, according to the inclusion and exclusion criteria, followed by a secondary screening by reading the full texts. Discrepancies encountered during the screening process were resolved through discussion with a third researcher, ultimately identifying the literature that met the criteria.

Data Extraction and Analysis

Two researchers independently extracted data from the included studies, with discrepancies resolved through discussion with a third researcher. Information extracted included authors, country, study type, sample size of study subjects, number of participants in each group, application context, intervention duration, study results, and a summary analysis was conducted.

Results

Characteristics of Included Studies

This systematic review identified and screened studies on the impact of nursing education innovations on the quality of care for elderly hospitalized patients. After the screening process (Figure 1), 9 studies were included: 3 randomized controlled trials, 1 non-randomized controlled trials, and 5 pre-post studies without control groups, published between 2013 and 2023. These studies involved 1,579 nursing students from various countries, primarily focusing on undergraduate or graduate students in elderly care, evidence-based practice, or related courses. Detailed characteristics are presented in Table 1. Interventions were mainly digital and technology-enhanced, including multimedia teaching software, game-based online teaching, clinical virtual scenarios, evidence-based practice platforms, and experiential/active learning via online systems. Comparisons were typically with traditional lecture-based methods, with durations ranging from a single 120-minute session to 21-week courses. Quality assessment using the JBI Critical Appraisal Checklist showed moderate to high methodological quality; however, heterogeneity in designs and outcomes precluded meta-analysis.

Impact of Nursing Education Innovation

Elderly Inpatient Outcomes

The innovative nursing education program has a positive impact on the prognosis of hospitalized elderly patients. In terms of the quality of life and psychological state of elderly inpatients (assessed mainly through tools such as SAS/SDS), a total of 6 studies were identified. Among them, 4 studies showed that the innovative nursing education was superior to the control group.^{11-14,16,17} (Table 1) Among these studies, 4 of them demonstrated statistically significant results, indicating that the innovative intervention measures were superior to the traditional lecture-based distribution. Compared with the traditional methods, Jones et al¹² adopted multimedia teaching methods in a 21-week elderly care course, Newhouse et al¹³ used cognitive apprenticeship media teaching, Davidson et al¹⁶ utilized e-learning systems, and Long et al¹⁷ adopted small-scale private online course teaching methods. These innovative approaches were associated

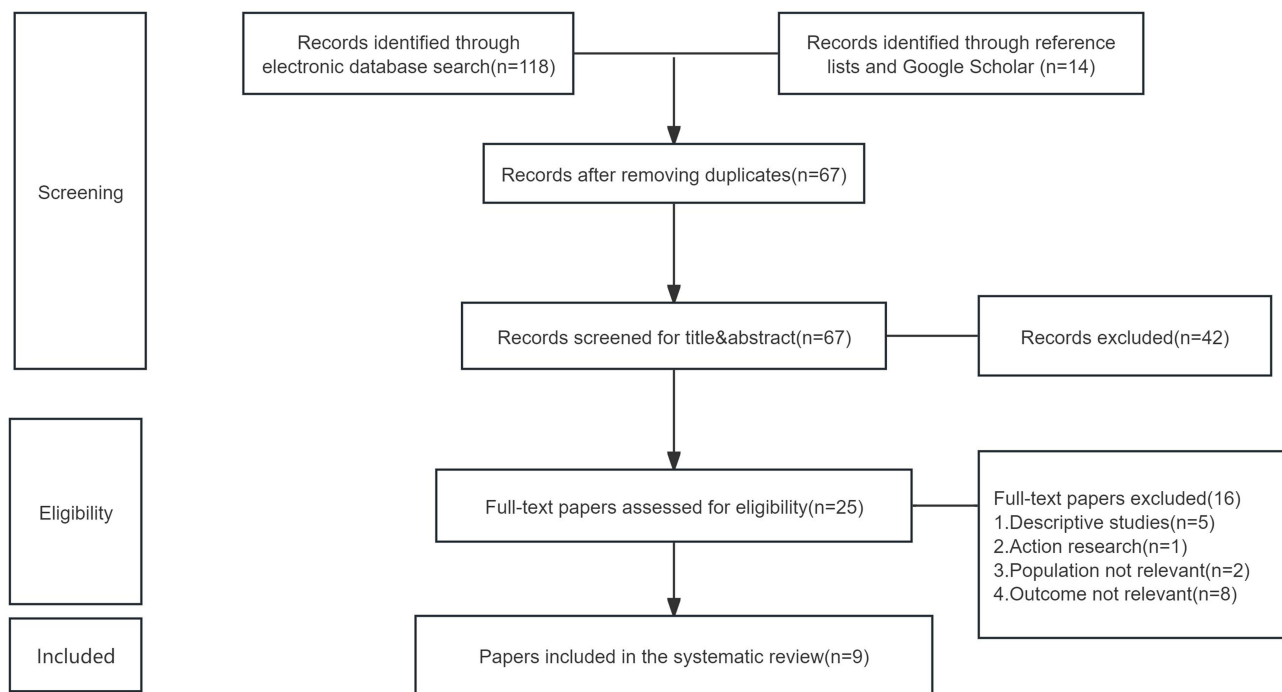


Figure 1 Flowchart of Literature Screening Process.

with significant improvements in quality of life and reduction in psychological stress (including symptoms such as loneliness and pessimism). The research conclusions of the other two studies did not have statistical significance, which might be related to the relatively short duration of the intervention.

Table 1 Characteristics of Included Studies

Authors/Year of Publication	Aim	Study Design	Population	Intervention	Outcome
Eaton J et al/2016 ¹¹	Evaluate effects of ethnodrama on nursing student attitudes toward older adults	Pre-Post no control	237	Multimedia Teaching Software	Quality of life, mental state
Jones et al/2023 ¹²	Assessing impact of online nursing education on student competence	RCT	174	Multimedia based on Mastery Learning Theory	Quality of life
Newhouse et al/2013 ¹³	Exploring feasibility of web-based DNP program	Pre-Post no control	98	Media teaching based on Cognitive Apprenticeship Theory	Quality of life, mental state
Shishani et al/2013 ¹⁴	Examine elderly smoking education program effect on student perceptions	Pre-Post no control	167	Game-based online teaching	Quality of life, mental state
Wilson et al/2015 ¹⁵	Pilot hybrid journal club for EBP ability	Non-randomized controlled	205	Clinical virtual scenarios online teaching	Mental state
Davidson et al/2016 ¹⁶	Evaluate innovative teaching strategy in online EBP course	Pre-Post no control	221	E-learning system	Quality of life
Long et al/2016 ¹⁷	Guide critical appraisal with online resources for EBP	RCT	300	Online learning with SPOC platforms	Quality of life
Foronda et al/2017 ¹⁸	Exploring virtual stimulus teaching on nursing skills	RCT	157	Virtual stimulation based on Adult Learning Theory	Mental state
Park et al/2020 ¹⁹	Develop web-based experiential learning for EBP engagement	Pre-Post no control	120	E-study with Active Learning Theory	Quality of life

Table 2 Summary of the Results of the Included Studies

Authors/Year of Publication	Length of the Interventions	Evaluation Period	Intervention	Comparison	P	Study Design
Eaton J et al/2016 ¹¹	A Pharmacology course of 2 credits	At the end of the course	Multimedia Teaching Software	None	$p > 0.05$	Pre-Post no control
Jones et al/ 2023 ¹²	A course of elderly nursing care of 21 weeks	At the end of the course	Multimedia Teaching based on Mastery Learning Theory	Traditional lectures	$p < 0.05$	RCT
Newhouse et al/2013 ¹³	A course in nursing of 6 weeks	At the end of the course	Media teaching based on the Cognitive Apprenticeship Theory	None	$p < 0.05$	Pre-Post no control
Shishani et al/2013 ¹⁴	A course in nursing of 11 weeks	At the end of the course	Game-based online teaching	Simulation	$p > 0.05$	Pre-Post no control
Wilson et al/2015 ¹⁵	A course of elderly nursing care of 7 weeks	During and after the course	Clinical virtual scenarios for real-life context online teaching	Traditional lectures	$p < 0.05$	Non-randomized controlled trial
Davidson et al/2016 ¹⁶	A course in nursing of 5 weeks	At the end of the course	Using e-learning system (Fudan University's E-Learning system)	None	$p < 0.05$	Pre-Post no control
Long et al/2016 ¹⁷	A course in nursing of 9 weeks	At the end of the course	Online learning with small private online course (SPOC) platforms	None	$p > 0.05$	RCT
Foronda et al/2017 ¹⁸	A course of elderly nursing care of 13 weeks	During and after the course	Virtual stimulation study based on Adult Learning Theory	None	$p < 0.05$	RCT
Park et al/2020 ¹⁹	A course of elderly nursing care of 6 weeks	At the end of the course	E-study with EBK and the Active Learning Theory	None	$p < 0.05$	Pre-Post study with no control group

Student Outcomes

In terms of enhancing the abilities of nursing students, including knowledge acquisition, clinical skills, attitudes towards geriatric care or evidence-based practice, as well as overall abilities (such as critical thinking, problem-solving, and self-directed learning) (Table 2). All 9 included studies reported secondary outcomes, consistently demonstrating that innovative interventions were superior to or equivalent to traditional lecture-based methods. Knowledge and skills improved significantly in 6 studies favoring innovative methods, particularly virtual simulations and multimedia approaches that boosted clinical performance and problem-solving.^{12,15,20} Attitudes toward older adults or geriatric care became more positive in 5 studies,^{11,12,14,15,21} with significant reductions in ageism or improved humanistic awareness in 3 cases. Overall competence, including critical thinking and engagement, was enhanced in 8 studies, promoting greater autonomous learning and family caregiver involvement in simulated scenarios,^{18–21} However, 3 studies showed no significant differences from traditional methods ($p > 0.05$), often in shorter or less interactive interventions.^{11,13,14}

These robust improvements in student knowledge, skills, attitudes, and competence provide a plausible mechanism for the indirect benefits observed in primary patient outcomes, strengthening the assumed “education → competency → patient outcome” chain.

Discussion

The nursing needs of elderly inpatients are generally high across various dimensions. Due to factors such as memory decline, multiple illnesses, poor prognosis, and reduced self-care abilities, these patients have difficulty adapting to unfamiliar environments and are particularly concerned about hospital safety and disease conditions. Therefore, safety, physiological and self-actualization needs are prominent. Additionally, most elderly inpatients enjoy high family or social

status and wish to be respected and valued in the hospital. As a vulnerable group, they are unable to care for themselves and experience feelings of loneliness, yearning for assistance. During their hospital stay, they desire attention from medical staff, resulting in high scores for self-esteem and love and belonging needs.^{20,22}

With the increasing nursing demand of elderly patients, there is a shortage of nursing talents in our country, and the existing nursing staff have problems such as old age, low education, and weak professional ability, which is difficult to match the demand. On the other hand, the awareness of clinical teaching is not strong, first of all, the nursing staff of the subsidiary, teaching and internship hospitals have a triple identity, which is not only a nursing staff, but also a teaching teacher, and at the same time engaged in scientific research. Due to their busy work, some nursing staff cannot correctly understand the importance of clinical teaching, thinking that nursing is a profession and teaching is a side job, and taking on teaching tasks as a burden. Second, some instructors think that interns are just errands, and do not talk about specialist knowledge and operational essentials; Thirdly, with the improvement of hospital service awareness, patient satisfaction has been paid more and more attention, and some hospitals will take satisfaction as an indicator of department and individual performance. These reasons lead to the low enthusiasm of some teachers and their reluctance to invest too much energy in clinical teaching, which affects the quality of clinical nursing teaching.^{21,23–25}

With the rapid development of educational informatization and network technology in Western countries, the learning of digital technology has been widely applied in the field of education. Currently, research on the application of digital technology in nursing education abroad mainly focuses on the design of digital technology teaching courses, the evaluation of digital technology teaching effects, and the influencing factors of digital technology teaching.²⁶ Mocznik²⁷ found that digital technologies benefit nursing education by enhancing learning, improving practical skills, and facilitating knowledge acquisition, with students holding positive attitudes towards this teaching method. Additionally, Cianelli²⁸ demonstrated that in practical nursing education courses, telehealth utilizing digital technology can reduce family cost burdens, maintain healthcare professionals' nursing behaviors, and promote the implementation of nursing, fostering a family-centered care system in local communities. Based on our research findings, the emerging nursing education model utilizing digital technology significantly enhances nursing students' engagement, technical proficiency, and teamwork abilities. Moreover, for elderly inpatients under nursing students' care, this new education model helps improve the quality of life and psychological state of patients by enhancing the nursing staff's care capabilities.

The learning of digital technology teaching models not only has the potential to transform the way education is provided to nursing students, but it also serves as a complement to the teaching models of student learning, communication, and interaction. By bringing the classroom to where students gather and employing methods based on theories of how the brain stores and retrieves information, it can facilitate and enhance students' learning abilities.

Conclusion

Innovative nursing education enhances student competencies, indirectly supporting improved quality of life and psychological well-being for elderly hospitalized patients. Direct causal evidence remains limited. These findings advocate integrating digital and simulation-based teaching in nursing curricula to address aging society needs.

Data Sharing Statement

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Ethical Approval

This study is a retrospective study that does not involve any new research on human or animal subjects. Therefore, it does not require ethical review.

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Disclosure

The authors declared that they have no conflicts of interest regarding this work.

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