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Review Article

The Effectiveness of Simulation in the Acquisition of Socioemotional Skills Related to Health Care: A Systematic Review of Systematic Reviews

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KEYWORDS
Simulation training;
Education;
Patient simulation;
Nursing;
Communication;
Self-efficacy;
High-fidelity simulation training

Abstract

Aim: The objective of this SR of SR is to answer the question: Is simulation effective for the acquisition of socio-emotional skills related to health care?

Background: Simulation has become a relevant methodology for the training of socioemotional skills; however, the effectiveness of this methodology is difficult to interpret due to the diversity of results obtained to date.

Methods: Searches were conducted in Medline, Scopus, Web of Science, and Cochrane Library databases for systematic reviews with meta-analyses published from 2011 to 2022. The searches were completed between December 2021 and January 2022. Study quality was assessed using the AMSTAR-2 scale. The protocol was registered in PROSPERO (CRD42022339156).

Results: A total of 1285 studies were examined, of which seven systematic reviews were selected, yielding 88 studies with 8658 participants. The most commonly used methodologies were standardized patient (28.4%) and high-fidelity simulation (26.1%). The training consisted of an average of 3.6 sessions, with a mean duration of 153.8 minutes. The most trained socioemotional skills were communication (34.4%), self-efficacy (30.5%), and self-confidence (13.3%). Most studies (78.4%) reported statistically significant results favorable to the intervention group in all skills trained.

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Conclusion: Simulation is an effective methodology for training a wide range of social and emotional competencies in students and health science professionals.

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Background

The origins of simulation date from ancient times when the military practiced war tactics on miniature models or live representations. Clinical simulation in nursing can be traced back to 1911 with the creation of the first mannequin (simulator) by Martha Jenkins Chase (Akselbo & Aune, 2022). In the medical field, the use of simulation began in the 1960s to train surgeons for the performance of complex surgical procedures. Since then, simulation has become a standard training technique in health sciences education (Piedrahita-Mejía & Cardona-Cano, 2022).

Currently, simulation has become more advanced and sophisticated. Different types of simulators exist depending on their degree of realism (fidelity). High-fidelity refers to simulation experiences that are extremely realistic and provide a high level of interactivity and realism for the learner (Healthcare Simulation Dictionary, 2020). Low-fidelity simulators are those that do not need "to be controlled or programmed externally for the learner to participate," these include case studies, role-playing, or task trainers used to support students or professionals in learning a clinical situation or practice (Healthcare Simulation Dictionary, 2020).

Theoretical Framework of Simulation

Simulation is "a technique that creates a situation or environment to allow persons to experience a representation of a real healthcare event for the purpose of practice, learning, evaluation, testing, or to gain an understanding of systems or human actions (SSH)" (Healthcare Simulation Dictionary, 2020). Thus, simulation represents a tool of choice to be used in university classrooms since it enables the recreation of real situations without negative consequences for the patient, where every mistake made becomes a learning opportunity (Abajas-Bustillo et al., 2020; Yu et al., 2021).

The educational effectiveness of simulation is based on various educational and psychological theories, including experiential learning theory, which argues that learning is most effective when students are engaged in meaningful, hands-on experiences (Falloon, 2019). In addition, it is supported by the social learning theory that argues that clinical performance improves through interaction and observation of peer performance (Johnson, 2020). It is also based on cognitive load theory, which suggests that there is a limit to the amount of theoretical information that students can process, and therefore, clinical simulation helps them to manage cognitive load and develop skills to make effective clinical decisions in high-pressure situations (Szulewski et al., 2021).

Within the current healthcare framework, simulation-based learning is an active methodology that facilitates the training of socioemotional skills (Abajas-Bustillo et al., 2020). These can be defined as the set of skills needed to understand, express, and regulate emotional phenomena appropriately, as well as to deal with a social situation in a way that is appropriate to the context. Following Bisquerra's theoretical developments (Bisquerra, 2003) and those by CASEL (Collaborative for Academic, Social, and E. L, 2005), socioemotional skills can be formulated based on the following terms: Self-awareness (addressing self-concept and self-esteem); Emotional self-management (focusing on emotional understanding and self-regulation); social competence (i.e., social awareness, empathy, communication, and assertiveness); and responsible decision-making or life and well-being skills (specifically, creative and assertive conflict resolution).

Socioemotional skills are crucial for health professionals because they often face critical and stressful situations that require emotional control and mastery of skills such as empathy and active listening (Dean et al., 2020; Guerrero et al., 2022; Kang et al., 2021; Prats-Arimon et al., 2022). In addition, these competencies have been found to improve the professional-patient relationship, leading to greater adherence to treatment and a greater willingness of the patient to participate in decision-making regarding their illness and recovery (Dean et al., 2020; Kang et al., 2021; Salas-Saavedra & Galiano-Galvez, 2017). They also facilitate the implementation of more effective care strategies, increasing user satisfaction and confidence (Alt et al., 2023) and encourage the cre-

ation of an enabling work environment together with colleagues (Mahmood et al., 2021). In short, it seems clear that the development of socioemotional skills is essential to improve the quality of the care provided (Sancho-Cantus et al., 2023).

Despite the existence of several systematic reviews (SRs) on the use of simulation for socioemotional skills training, their results, quality, and scope are remarkably heterogeneous. Therefore, to offer a more comprehensive and reliable synthesis of the available evidence to facilitate understanding and decision-making on the subject, an SR of systematic and integrative reviews (SR) was proposed, since none have been published to date. Following the PICO structure, the objective of this SR of SR was to answer the question: Is simulation effective for the acquisition of socioemotional skills related to health care?

Material and Methods

Search Methods

The searches were conducted during the months of December 2021 to January 2022. They included documents published between 2011 and 2022. Four databases were consulted: Medline, Scopus, Web of Science, and Cochrane Library. Controlled MeSH terms and free text were used as descriptors, combined with the Boolean operators "AND" and "OR" (Appendix A).

Inclusion Criteria

SRs with meta-analyses, published in the last 10 years, provide quantitative results of socioemotional skills after simulation training aimed at students or health sciences professionals. The exclusion criteria were: Qualitative meta-syntheses and scoping reviews. Likewise, SRs that did not include quantitative syntheses or SRs in which the quantitative synthesis did not provide data from health science professionals or students were excluded.

Data Extraction

For the SR, a protocol with procedures and coding forms (available upon request) was created. The protocol was registered in PROSPERO (International Prospective Register of Systematic Reviews) under number CRD4202222339156. Two coders (MLP and NRP) independently extracted the data from the selected studies using an Excel spreadsheet and the coding manual created for this purpose. Once the coding was performed, the degree of intercoder agreement was estimated to be 0.92 (Cohen's Kappa mean = 0.90 and Spearman–Brown correlation mean = 0.94). Disagreements were resolved by intercoder deliberations and, when necessary, the judgment of a third reviewer was called upon.

Quality Assessment

The AMSTAR-2 scale was used to evaluate the quality of the selected SRs (Shea et al., 2017). This tool consists of 16 domains, with simple response options: 'yes', when the result is positive; 'no', when the standard was not met or there is insufficient information to respond; and 'partial yes', in the event of partial adherence to the standard.

Results

Of the 1285 studies identified in the search, seven SR were selected (Ardakani et al., 2019; La Cerra et al., 2019; Delisle et al., 2019; Kononowicz et al., 2019; Oh et al., 2015; Piot et al., 2021; Selman et al., 2017). Figure 1 shows the flow chart of the identification procedure according to the PRISMA guide (Page et al., 2021).

Quality of the SRs Included

The mean score on the AMSTAR-2 scale was 17.13 (Table 1). Overall, all articles scored high on the scale, indicating that they met the established quality criteria. Consistent compliance was evident in key areas, such as inclusion, comprehensive search, and study design. Those excluded were adequately justified and those included were detailed. All the studies showed a low risk of bias. The degree of transparency in information regarding funding, statistical methods, and explanation of heterogeneity was outstanding. No publication bias or conflicts of interest were detected, thus strengthening the reliability of the results.

Characteristics of the SRs Included

The seven SRs included covered 88 studies that provided quantitative results of socioemotional skills trained using different clinical simulation methods (standardized patient, high-fidelity simulation, role-playing [RP], and virtual patient). Table 2 and Appendix 2 describe the selected SRs.

The publication interval of the primary studies, included in the seven selected SRs, was between 1990 and 2020. Up to 65.9% ($n = 58$) were Randomized Clinical Trials, whereas 23.8% ($n = 21$) were nonrandomized quasi-experimental studies with prepost or post-only control. These studies were conducted in different parts of the world, although most were conducted in the United States ($n = 25$), followed by Korea ($n = 19$) and Canada ($n = 6$).

Description of Participants

The seven SRs provided a total of 8658 participants (6855 women and 1803 men) of whom 4702 were in the interven-

Table 1 – Quality Assessment According to the AMSTAR-2 Scale

Main author (year of publication)	Inclusion question	Protocol	Study design	Exhaustive search	Study selection	Data extraction	Justification of excluded studies	Details of included studies	Risk of bias	Sources of funding	Statistical methods	Risk of bias in meta-analysis	Risk of bias in individual studies	Explanation of heterogeneity	Publication bias	Conflict of interest	Overall score	Global
Ardakani et al. (2019)	1	1	3	2	1	1	2	1	1	1	1	1	1	1	1	1	20	H
Delisle et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	H
Kononowicz et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	H
La Cerra et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	H
Oh et al. (2015)	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	18	H
Piot et al. (2021)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	H
Selman et al. (2017)	1	1	1	2	1	1	2	1	2	1	1	1	1	1	1	1	19	H

1 = yes; 2 = partial yes; 3 = no; 4 = no meta-analysis; CL = critically low; L = low; M = medium; H = high.

Table 2 – Description of Selected Systematic Reviews

No SR	First author (year of publication)	Data collection interval	Country	Databases used*	Inclusion criteria†	No of primary studies included in the SR	No of primary studies assessing socioemotional skills	Results after intervention (categorized)‡		
								SR	NSR	MIX
1	Ardakani et al. (2019)	1997-2017	Iran	PM, CL, WOS, SD	Nurses, communication skills training, simulation, role play, communication skills and self-efficacy.	12	10	9	1	0
2	Delisle et al. (2019)	2010-2018	United States	M, CH, E, CL, S, WOS, ERIC, PI	Prospective randomized, crossover, parallel, and quasi-experimental RCTs. Health professional. Health sciences student. Simulation training	13	8	6	2	0
3	Kononowicz et al. (2019)	1990-2018	Singapore	M, E, CH, PI, ERIC, CIN, WOS	Randomized study and clusters. Undergraduate or postgraduate health education or training program. Screen-based virtual simulation.	51	13	8	2	3
4	La Cerra et al. (2019)	2006-2017	Italy	PM, S, CL, W, WOS	Undergraduate or postgraduate nursing students performing HFPS in life-threatening clinical conditions, groups not evaluated before, measurement of data postintervention.	33	15	11	3	1
5	Oh et al. (2015)	Until 2014	South Korea	CH, M, CL, GS, KD	RCT or NCS Nursing students or graduates. Simulation with standardized patients. Sufficient data for calculation of effect size.	18	16	14	2	0
6	Piot et al. (2021)	2010-2020	France	M, E, S, CL, PI, ERIC, CH, WOS	RCT, NCS, single-group pre/posttest, simulation studies in management of people with mental disorders for nursing students or professionals in psychiatric or nonpsychiatric settings.	118	8	6	1	1
7	Selman et al. (2017)	2004-2015	UK	M, E, PI, ERIC, CH, W, WOS, ICTRP, OG	RCT. Professionals in the field of palliative care. Studies that train communication skills.	19	18	15	3	0

* Databases used: CH = Cochrane; CL = CINAHL; E = ENBASE; ERIC = Educational Resource Information Centre; GS = Google Scholar; ICTRP = International Clinical Trials Registry Platform; KD = Korean databases (KMBASE, KOREAMED, RISS, KISS, and NANET); M = MEDLINE; OG = OpenGrey; PM = PubMed; S = Scopus; SD = Science Direct; W = Wiley Online Library; WOS = Web of Science; PI = PsycINFO.

† Inclusion criteria: HFPS= high-fidelity patient simulation; RCT= Randomized clinical trial; NCS= Nonrandomized control study.

‡ SR: no de primary studies that after training of socioemotional skills report all of their statistically significant results; NSR=nonsignificant result; MIX= mixed results.

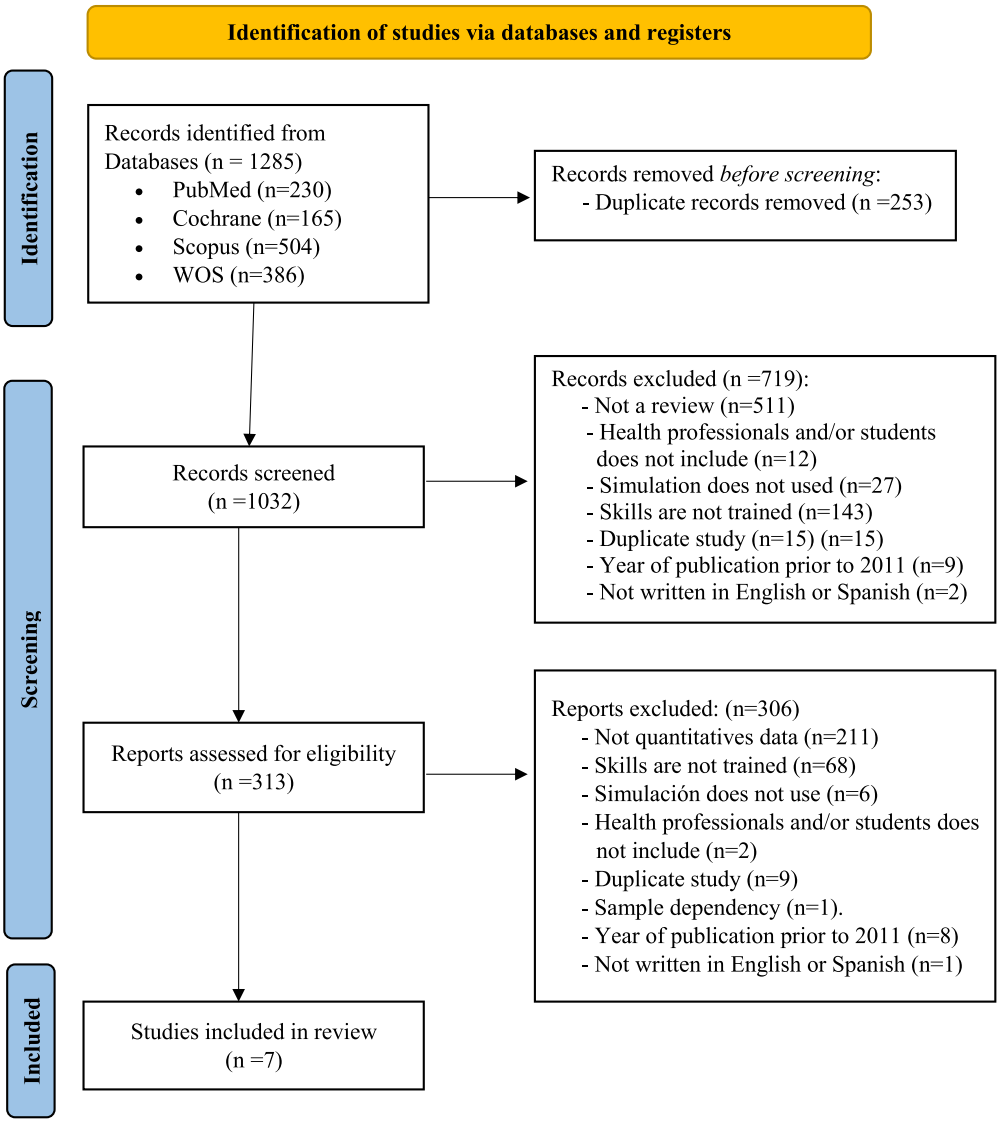

Figure 1 Flowchart of the selection process.

tion group and 3845 in the control group. The participants were students or professionals in nursing, medicine, dentistry, and social work. Although most of the training was received by nursing students and graduate nurses, 65.9% ($n = 58$). The characteristics of the participants are shown in Table 3.

Trained Socioemotional Competencies

In the 88 primary studies, a total of 129 socioemotional skills were trained. Up to 68.2% ($n = 60$) of the studies trained a single skill, 20.5% ($n = 18$) trained two, 9% ($n = 8$) trained three, and 2.3% ($n = 2$) trained four within the same training program.

The socioemotional skills that were most trained (k) were communication 34.4% ($k = 44$) and self-efficacy 30.5% ($k = 39$). When grouped by trained competencies, those related to self-awareness 43.8% ($k = 56$) stand out, where self-efficacy and self-confidence are trained. This was followed by those related to social competence 40.7% ($k = 52$), with communication, empathy, and active listening. To a lesser extent, training was focused on responsible decision-making 14.89 ($k = 19$) in which problem solving, critical thinking, teamwork, and leadership were trained and, lastly, the least trained skill was emotional self-management 0.79% ($k = 1$) including emotional intelligence (Table 4).

Types of Simulation Used for Social-Emotional Skills Training

The most frequent methodology used to train socioemotional skills was the standardized patient 28.4% ($n = 25$), followed by high fidelity simulation 25% ($n = 22$), RP 19.3% ($n = 17$), and virtual patient 14.8% ($n = 13$). In

Table 3 – Description of the Participants in the Primary Studies Included in the Selected SRs

No SR	Type of participants*	No. of participants ($n = 8658$)	Women†	Men†	Intervention group ($n = 4792$)	Control group ($n = 3845$)
1	GN, PH, NN, ON	1127	631	133	985	150
2	UGN, RP, UGP	623	101	109	352	271
3	UGP, GN, RP, HSP, UGD	1096	194	153	609	477
4	UGN	1622	1120	197	752	870
5	GN, UGN, RN, ON	1099	323	31	526	573
6	UGS, UGN, ON, MHN	1286	1168	119	626	641
7	GN, RP, UGP, ON, O, MD, G	1805	825	526	942	863

* Type of participants: UGD = undergraduate dentist; GN = general nurses; NN= neonatal nurses; ON= oncology nurses; RN = resident nurse; MHN= mental health nurse; UGN= undergraduate nurses; G= gynecologist; MD= medical doctor; UGP= undergraduate physicians; RP= resident physician; O = oncologist; HSP= health sciences professional: UGS = undergraduate social worker.
† For some studies, participant number is unclear or not reported.

Table 4 – Intervention Design According to Teaching Methodology

Teaching methodology	Skills trained	Mean number of sessions	Mean minutes/session
Standardized patient ($n = 25$)	Self-efficacy ($k = 15$); communication ($k = 14$); problem solving ($k = 3$); self-confidence ($k = 1$); emotional intelligence ($k = 1$); a0ctive listening ($k = 1$), and empathy ($k = 1$)	4.4	155.5
High-fidelity simulation ($n = 22$)	Self-efficacy ($k = 10$); self-confidence ($k = 9$); communication ($k = 6$); problem-solving ($k = 6$); teamwork ($k = 5$); critical thinking ($k = 2$); leadership ($k = 1$); empathy ($k = 1$)	2.9	109.4
Role-playing ($n = 17$)	Communication ($k = 10$); self-efficacy ($k = 9$); empathy ($k = 3$); problem solving ($k = 1$); active listening ($k = 1$)	4.9	149.8
Virtual patient ($n = 13$)	Communication skills ($k = 7$); self-confidence ($k = 4$); teamwork ($k = 1$); self-efficacy ($k = 3$)	1.42	71.4
Training sessions in which methodologies were combined ($n = 11$)	Communication ($k = 7$); self-efficacy ($k = 2$); self-confidence ($k = 3$); teamwork ($k = 1$); empathy ($k = 1$)	4.1	144.7

n = number of primary studies; k = number of socioemotional skills trained.

some studies, two or more methodologies were combined ($n = 11$) (Table 4).

Although the training sessions had different durations, some were delivered in one day and others over a period of 12 months. The average number of sessions was 3.57 with a mean duration of 153.75 minutes. The methodology that required the most sessions on average was RP and the methodology that required a longer average time was standardized patient (Table 4). The methodology that required the least number of sessions and the shortest duration was virtual patient. The training sessions using standardized patients consisted of a clinical practice guided by a trained actor to simulate cases or interviews, sometimes accompanied by multimedia tools and/or RP, theoretical classes, or didactic material (e.g., brochures). The mean training time was 4.4 sessions lasting 155.5 minutes each.

The high-fidelity simulation training involved the reenactment of clinical cases designed to be as realistic as possible. While one group participates, the other group watches on a screen from another room. In high-fidelity simulation training, advanced manikins, such as laerdal's SimMan, simBaby maniquie, and Simulacion HearthCode Basic Life Support, were used, and participants were divided into small groups to experience immersive scenarios of varying duration and complexity. Instructors played a crucial role in guiding and providing realism. Peer observation was also encouraged along with subsequent debriefing.

During RP, the students tried to act as health professionals in simulated situations to practice and apply socioemotional skills in an active and participatory manner. Up to 29.4% ($n = 5$) of the RP training was accompanied by theoretical models and/or video demonstrations as part of the teaching, used as a solid conceptual basis before performing the exercise.

Training with virtual patients is a computer simulation model that simulates the physiology, symptoms, and/or problems of a real patient. In this methodology used with virtual patients, the digital tools and approaches used were varied (e.g., Digital Animated Avator, Articulate Storyline, Virtual People Factory). In these scenarios, participants assumed the role of a healthcare provider and had to answer different questions related to the acquisition of clinical information, diagnosis, patient management, and follow-up in the virtual interface ($n = 13$). This type of training was aimed at developing skills in the context of the clinical interview. Sometimes these trainings were accompanied by traditional methods such as case lectures, group discussions or master classes ($n = 4$), and in others ($n = 3$) they were accompanied by subsequent discussion or feedback.

Control Group

Of the 88 primary studies, 94.31% ($n = 83$) had a control group whereas five studies did not have any control group. Of those with a control group, 36.14% ($n = 30$) received no training, 28.92% ($n = 24$) received a traditional lecture and/or case reading 14.46% ($n = 12$) and 7.23% ($n = 6$) underwent training with medium or low fidelity mannequins.

Assessment of Trained Socioemotional Skills

Validated scales, as well as questionnaires adapted from existing scales or *ad hoc* scales, were used for the assessment of socioemotional skills. The most used validated assessment scales were the OSCE (Objective Structured Clinical Examination) 4.42% ($n = 5$) and the NSROSCT (Nurses' Self-Efficacy Ratings in Oncology Specified Communication Tasks Scale) 3.53% ($n = 4$). The most used unvalidated assessment method was the researcher developed multiple-choice MCQ scale at 33.63% ($n = 38$) followed by observed communication skills at 14.16% ($n = 16$). In 63.6% ($n = 56$) the evaluation of the impact of the training was performed immediately after the end of the training or within 2 weeks ($n = 2$). Only 26.1% ($n = 23$) of primary studies reported that they carried out a follow-up of the effects of training between 1 month and 1 year after the end of training. In 10.2% ($n = 9$) of the studies this data is unknown.

Up to 57.95% ($n = 51$) of the assessments had a pre- and post-test design, in 36.36% ($n = 32$) there was only one post-assessment and in 5.68% ($n = 5$) this data is unknown. A total of 78.4% ($n = 69$) obtained statistically significant results in favor of the intervention group in all the socioemotional skills trained. Moreover 15.9% ($n = 14$) reported improvements after the intervention but did not obtain statistically significant results and 5.7% ($n = 5$) obtained statistically significant results for some of the trained skills and not significant for others.

Discussion

This SR of SRs, the first to our knowledge, provides a synthesis of simulation training in the development of socioemotional skills among health science professionals and students. The results obtained support the use of simulation for the training of socioemotional skills, showing an improvement mainly in communication skills, self-confidence, and self-efficacy. The promotion of socioemotional competencies in health sciences university education aims to generate benefits on the personal well-being of professionals and work success with the provision of effective and quality care. Several studies (Sapra, 2019; Weiler et al., 2018; Yu et al., 2021) argue that possessing interpersonal and communication skills is a useful resource in the face of adversity, by increasing satisfaction with relationships, facilitating the ability to cope with stress and the to adapt to the work environment.

Lack of Follow-Up of Long-Term Results

Despite these good results, most of the studies do not provide information on whether they evaluated the maintenance of the trained skills in the medium and long term and therefore this review cannot affirm that the trained skills are maintained over time. Several authors insist on the importance of long-term follow-up to assess the retention and continued applicability of social-emotional competencies in dynamic and challenging healthcare environments (Hanshaw & Dickerson, 2020; Watts et al., 2021).

Trained Socioemotional Skills

The results reveal a focus on the development of communication skills, self-efficacy, and self-confidence, with little attention given to empathy, emotional intelligence, and teamwork. Despite this, several studies (McNulty & Politis, 2023; Sancho-Cantus et al., 2023; Stoller, 2021) highlight the importance of these skills in healthcare practice, as they enhance understanding of patients' emotional needs and promote strong relationships, trust, and treatment adherence. In addition, they facilitate decision-making based on medical data and emotional needs and contribute to job satisfaction and a collaborative environment. They also help prevent burnout among professionals (Adamson et al., 2018; Berduzco-Torres et al., 2021).

Training Methods

The most used training methods were standardized patient and high-fidelity simulation. These data indicate a trend toward more innovative and realistic approaches that were traditionally used almost exclusively to train technical skills (Foronda et al., 2020; Guerrero et al., 2021). Although well-valued by the student body, their implementation can be costly and stressful, limiting their adoption in nursing programs, especially in resource-limited settings (Bryant et al., 2020).

Our findings revealed training sessions combining several teaching methodologies. Thus, several authors (Alsabri et al., 2022; Erdemir et al., 2020; Yousef et al., 2022) advocate the use of a combination of different teaching methods in order to adapt training programs to the specific needs of the participants and take advantage of different methodological approaches to achieve better results regarding the development of socioemotional competencies. In our review, although RP was not the most used method, it could be considered a valuable strategy as a preliminary step to high-fidelity simulation because it is often stressful for students due to concerns about peer perception and self-image, impacting cognitive response and learning (Segura et al., 2020). Moreover, RP, which is less expensive and does not require costly infrastructure, can be a favorable option, especially in resource-constrained environments (Altamirano-Droguett, 2019).

Concerning the psychophysiological stress associated with high-fidelity simulation, it is crucial to address this aspect to ensure the quality of training (Mauriz et al., 2021). Mitigating this negative effect involves providing prior guidance, cultivating a supportive environment, and promoting constructive feedback (Kaneko et al., 2022; Sadovnikova et al., 2020). In addition, starting with less stressful scenarios, and gradually increasing complexity, is vital for learners to gain confidence. Subsequent debriefing sessions are essential for emotional processing and learning, evaluating what worked and areas for improvement (Lapum et al., 2019).

Assessment Methods

In the studies reviewed, there is evidence of great diversity in the assessment tools used. Perhaps the variety of socioemotional skills trained in different contexts and cultures can justify this heterogeneity, although this is an important limitation for the evaluation of the effectiveness of interventions (Danner et al., 2021).

Limitations

The main limitation of this SR of SRs is the wide heterogeneity detected in the training of socioemotional skills, which has made it difficult to compare and synthesize the results. The articles published in languages other than English or Spanish, the scarcity of information provided by some of the selected reviews, as well as the absence or scarcity of valid and reliable assessment instruments are additional limitations that affect the representativeness and reliability of the findings. Therefore, caution is advised when interpreting and extrapolating the results.

Despite its limitations, this SR also has a number of strengths. It is important to highlight the methodological quality of the studies included in this review. All the selected articles scored high on the AMSTAR-2 scale, indicating that rigorous criteria were followed in the design and implementation of the primary studies. These findings support the methodological soundness of the primary studies that investigated the impact of simulation training on socioemotional skills. Furthermore, we believe that this is a groundbreaking study as there are no SRs of SRs published on this topic to date.

Implications for Research

This study highlights several implications for education, practice, and research in the context of care provided by health professionals. First, it supports the efficacy of simulation to develop socioemotional skills among students and professionals in the field of health sciences, by covering aspects such as self-efficacy, confidence, and communication, among others. In addition, it suggests that these training, although commonly associated with end-of-life education, can be extrapolated to multiple contexts. The review also highlights the need to improve the assessment of these skills, implement long-term follow-ups, and expand training to include knowledge and attitudes, thus configuring socioemotional competencies.

This review also identifies areas for improvement, such as the need to develop standardized simulation designs for socioemotional competency training, the usefulness of establishing consensus definitions that facilitate the evaluation of simulation in this type of training, and the inclusion of the student's perspective regarding their simulation experience and how it contributes towards improvements in the clinical setting.

Conclusion

This SR of SR advocates for the use of simulation training in the development of socioemotional skills in health science professionals and students. The results suggest that simulation, in its different forms, offers an effective platform for strengthening crucial skills such as communication, self-confidence, teamwork, problem solving, empathy, active listening, emotional intelligence, and self-efficacy. Despite the promising evidence supporting the use of simulation, further research with robust designs and represen-

tative samples is needed, considering the importance of tailoring training to the specific needs of each care setting.

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Author Contributions

C.O.M contributed to the conceptualization and design of this review. RMM contributed to the literature review, M.L.P contributed to the design, literature review, screening, data extraction, quality appraisal, aggregation of data, and the reviewing and writing of this manuscript. C.O.M and N.R.P contributed to the quality appraisal. C.O.M. and R.A.B. supervised the review and contributed to the conceptualization, reviewing, and editing of the manuscript.

Declaration of Competing Interest

The authors declare that they have no conflicts of interest.

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Supplementary materials

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