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## Review Article

# The Educational Value of Mental Health Simulation in Undergraduate Bachelor of Nursing Education: An Integrative Review

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## KEYWORDS

integrative review;  
mental health;  
nurse education;  
simulation;  
undergraduate nurse  
education

**Abstract** To investigate the state of knowledge on the use of mental health simulation in undergraduate nursing education. Using PRISMA and following systematic search processes and quality appraisal, 15 empirical research articles were extracted and analysed, resulting in two key themes with subthemes. Findings note the importance of realism and debrief in simulation and in improving students' confidence, and their attitudes and perceptions about people with mental illness, and in bridging the theory-to-practice gap. Simulation is recommended as a key component in undergraduate nursing curricula where advanced therapeutic communication and mental health assessment skills can be taught.

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## Introduction

Simulation in health care education is the reproduction of a clinical environment for the purpose of teaching, examin-

ing, or replacing clinical placement (Roberts, Kaak, & Rolley, 2019). Therapeutic interpersonal and mental health assessment skills are a necessary component of mental health nursing education, and simulation with simulated participants has been used to support this process (Hall, 2017). Although there is growing use of mental health simulation-based education in undergraduate nursing programs, the evidence on this has not yet been synthesised.

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The importance of interpersonal skills for all nurses, particularly those in mental health settings, cannot be overstated. Mental health nursing requires a unique set of skills that include interpersonal skills as the foundation of mental health care, as well as clinical skills in de-escalation and negotiation, critical thinking, and assessment skills including mental state and risk assessment (Goh et al., 2021). Interpersonal skills for mental health are nuanced and include fundamental communication skills including open-ended questioning, clarifying, paraphrasing, and validating (Blake & Blake, 2019), and more advanced interpersonal skills including reflective practice, boundary maintenance and reflexivity (Schwind, McCay, Metersky, & Martin, 2016). These skills take time and practice to master, yet there has been a reported decline in the teaching of these so-called “soft skills” at the expense of expanding “hard” or technical skills in undergraduate nursing curricula (Ng, 2020; Waite & McKinney, 2016). This has had impacts on graduate nurses’ confidence when entering mental health, where they have reported being apprehensive about their novice interpersonal and critical thinking skills, needing further support to develop these essential skills (Song & McCreary, 2020).

A variety of educational activities have been employed over the years to teach and enhance interpersonal and clinical skills for mental health in nursing students, including role play and case-based learning. Overwhelmingly, however, simulation with simulated participants has been identified as the most beneficial simulation modality in the development of nursing students’ interpersonal and clinical skills in mental health (Gutierrez-Puertas, Marquez-Hernandez, Gutierrez-Puertas, Granados-Gamez, & Aguilera-Manrique, 2020). A simulated participant is a person who has been trained to depict the role of a patient, often working from a script of symptoms and illness presentations (Lioce et al., 2020). Students need time to practice and master these skills, while utilising therapeutic use of self, and demonstrating unconditional positive regard (Schwind et al., 2016) in a simulated environment.

In mental health education, while simulation with simulated participants appears to be the preferred method, there are reports of part-task trainers, virtual simulation, and manikin-based simulation also being used (Hall, 2017). While these other modalities may be more cost effective (because they use existing technical equipment), and have value in nursing education, they lack the realism that an actual simulated participant portrays because their responses are not real (Hall, 2017).

In a curriculum that does not utilise mental health simulation, a student’s first attempt to engage therapeutically with a person with mental illness may be during their clinical placement. Research has identified that students feel anxious about engaging with people with mental illness (Goh et al., 2021). Yet higher student clinical confidence in mental health nursing has been correlated with increased preparedness for placement, and reduced anxiety about en-

gaging with people who have mental illness (Lim et al., 2020). Research has reported moderate-to-high levels of self-reported student preparedness prior to mental health placement and that these rates significantly increased after mental health clinical placement (Foster et al., 2019). There are further reports that simulation prior to placement can reduce students’ preplacement anxiety and encourage knowledge attainment (Williams, Reddy, Marshall, Beovich, & McKarney, 2017). One study noted 75% of undergraduate nursing students (n = 113) reported that simulation helped prepare them for practice (including mental health), and that they thought more simulation should be offered within the curriculum (Woods et al., 2015). There is a need to ensure students are provided with ample opportunities to practice therapeutic communication skills *prior* to placement.

There has been significant synthesis of empirical studies into the use of simulation in generalist nursing (see, e.g., Bogossian et al., 2019) and other health care disciplines adopting technical practices (see, e.g., Khan et al., 2019), with such a volume of research necessitating reviews on specific types of simulation (e.g., hybrid, virtual reality, etc.). Research into mental health nursing simulation is emerging. Over the past 10 years there has been an increase in empirical research on mental health simulation in undergraduate nursing curricula, with several prior reviews on simulation conducted. These have focused specifically on consumer care outcomes (Williams et al., 2017), pedagogy (Goh et al., 2021), operationalisation and student experience (Vandyk et al., 2017), and simulated participant simulation (Ogard-Repal, Knutson De Presno, & Fossum, 2018).

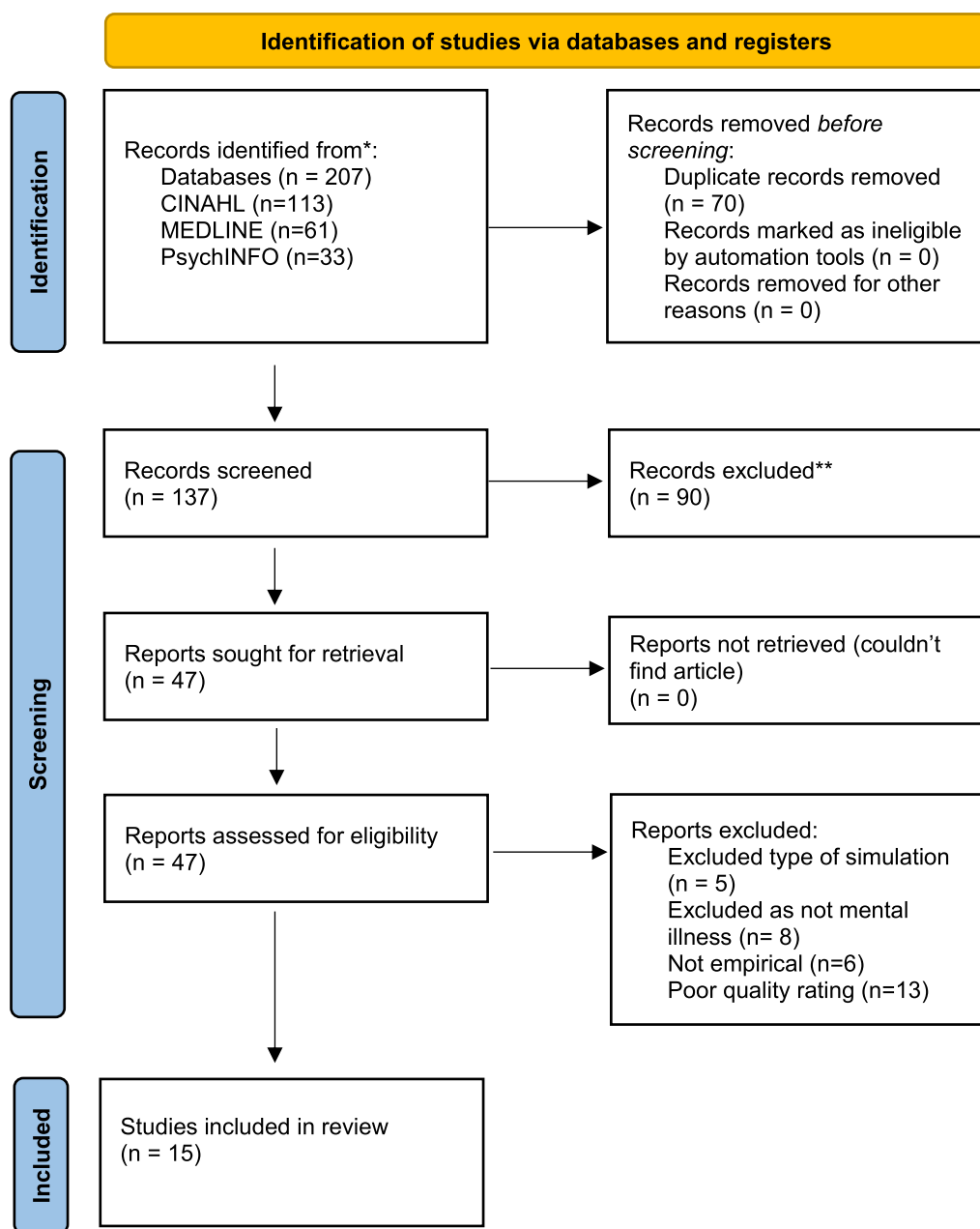
## Review Aims and Objectives

The overall aim of this review was to investigate the state of knowledge on the use of mental health simulation in undergraduate nursing education. Specific objectives were to: (a) explore and synthesise the state of knowledge on the use of mental health simulation in undergraduate nursing programs, and (b) examine how mental health simulation impacts students’ educational preparedness for practice.

## Methods

### Design

An integrative literature review was undertaken, following the review methodology established by Whittemore and Knaff (2005). This review method allows for the inclusion of various research designs, both qualitative and quantitative, to reach conclusions from the evidence base that are comprehensive and reliable (Dhollande, Taylor, Meyer, & Scott, 2021). Whittemore and Knaff’s (2005) method-



**Figure 1** PRISMA flowchart of search strategy (Page et al., 2021).

ology employs a systematic process to conduct a review that is rigorous and robust. The stages as recommended by Whittemore and Knaf (2005) were followed, including identifying the problem, searching the literature, evaluating data, analysing data, and presenting conclusions. The reporting of the review was conducted in accordance with the Preferred Reporting Items of Systematic Review and Meta-Analyses (PRISMA) (see Figure 1) (Page et al., 2021).

### Search Strategy

Prior to the systematic search process, a preliminary search of Google Scholar was conducted for relevant literature,

and for prior reviews on the topic. PROSPERO was also checked for relevant protocol registrations and was searched to locate any existing reviews. No prior relevant reviews with the same aim and objectives were identified. Systematic searches were then conducted to retrieve relevant empirical research in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database, MEDLINE Complete, and PsycINFO electronic databases via EBSCOhost. An initial search was conducted in MEDLINE to determine keywords and subject headings commonly used in existing literature on the topic. Search terms were finalised, and systematic searches conducted in consultation with a trained librarian, combining keywords us-

**Table 1** – Search Terms

	Students	Mental Health	Simulation
<b>Title/Abstract Keyword</b>	“undergrad* bachelor of nursing student” OR “undergrad* BN nursing student” OR “Pre#registration student nurs*” OR “Student nurs*” OR “nurs* college student” OR “college nurs* student”	“Mental health” OR Psychiatr*	Simulation
<b>CINAHL Headings</b>	(MH “Students, Nursing, Baccalaureate”) OR (MH “Students, Nursing”) OR (MH “Students, Nursing, Practical”)	(MH “Mental Health”) OR (MH “Psychiatry”)	(MH “Simulations”)
<b>APA Thesaurus of Psychological Index Terms (PsycINFO)</b>	DE “Nursing Students”	(DE “Mental Health”) OR (DE “Psychiatry”)	DE “Simulation”
<b>MeSH (Medline)</b>	(MH “Students, Nursing”)	(MH “Mental Health”) OR (MH “Psychiatry”)	N/A

ing Boolean operators (see [Table 1](#)). Original primary research that had been peer-reviewed and published between January 2011 and July 2021 in the English language was included. The search strategy included key terms and controlled vocabulary (i.e., medical subject headings terms) (see [Table 1](#)). The search terms were determined to align with the aims of the review.

Research on the use of mental health simulation within undergraduate Bachelor of Nursing degrees, using a range of simulation modalities, was included (see [Table 2](#)). Mental health conditions included major mental health conditions (e.g., schizophrenia, depression, mania, etc.) and self-harm. Simulations which were not focused on mental health conditions, such as workplace or domestic violence, were excluded. Literature reviews, commentaries, editorials, and grey literature were excluded.

## Search Outcome

The PRISMA ([Page et al., 2021](#)) flowchart reports the searches and screening process for studies included in this review (see [Figure 1](#)). Database searches yielded 207 abstracts; CINAHL (n = 113), MEDLINE (n = 61) and PsycINFO (n = 33), with 70 duplicates removed using EndNote x9 bibliographic software (Clarivate Analytics, Philadelphia, PA). Remaining articles were imported into Covidence systematic review software ([Veritas Health Innovation, 2021](#)). Title and abstract screening were conducted by two reviewers (L.A. and B.C.), with 90 abstracts excluded, resulting in 47 abstracts for full text review. After quality rating assessment, a further 32 articles were excluded leaving 15 articles included in the review.

**Table 2** – Simulation Definitions

Simulation Modality	Definition
Augmented reality	Computer generated virtual reality, for example, using computer screens or head displays.
Hybrid	Union of two or more modalities of simulation, for example, a simulated participant and a part task trainer arm, for blood draw
Manikin	A life-sized simulator that replicates human functions (e.g., blinking, palpable pulses, heart sounds, etc.) for purpose of practice.
Online	A simulation offered through an online platform, usually utilising virtual patients.
Simulated or standardised participant/patient	Someone who has been trained to portray an actual patient, or family member in a simulation and who could not be detected by skilled practitioner.
Task trainer or part task trainer	A simulator that mimics an element of a procedure or skill, using a region of the body (e.g., arm).
Virtual patient	A software-develop simulated patient who mimics an actual person.
Virtual reality	An augmented computer generated and interactive three-dimensional world which recreates a situation on a screen.

Lioce et al. (2020).

## Quality Appraisal

Data from 28 relevant articles were extracted, analysed, and critically appraised using the Joanna Briggs Institute (JBI, 2017) Critical Appraisal Tools. Two authors applied the relevant Critical Appraisal Tool to each individual study and were scored as yes (1), no (0), unclear or not applicable. Any discrepancy between scoring was discussed between authors to reach a consensus. If consensus could not be reached, a third author was used to resolve the matter. As there was no guidance in the JBI checklists to rank the quality of articles, the methodology described by Camp and Legge (2018) was employed. Establishing a quality rating as undertaken by Camp and Legge (2018) ensures that any recommendations arising out of the review are based on robust evidence. The authors tallied each quality checklist, and a percentage was calculated to ensure consistency between scoring. Articles were ranked on three levels of quality. Those meeting 75% or greater criteria were deemed high quality, those meeting 50%-74% were ranked moderate quality, and <50% were ranked low quality. In the 28 articles assessed for quality, 15 scored moderate-high, and 13 articles were deemed low quality and excluded.

## Data Extraction and Analysis

Whittemore and Knaf's (2005) methodology for data extraction and analysis was followed. That is, using a data matrix table, data were ordered, coded and categorised against the review objectives, (preparedness, mental health simulation, etc.) resulting in conclusions being drawn about the research problem. Following an iterative and inductive process of thematic development by the research team, two main themes with subthemes were derived.

## Results

### Description of Studies

A total of  $n = 15$  papers were included, from Australia ( $n = 3$ ), United States ( $n = 4$ ), United Kingdom ( $n = 2$ ), Canada ( $n = 2$ ), Norway ( $n = 2$ ), Spain ( $n = 1$ ), and Turkey ( $n = 1$ ). There were  $n = 7$  quantitative,  $n = 6$  qualitative, and  $n = 2$  mixed methods papers. See Table 3 for overview of included studies. Most studies utilised simulated participants ( $n = 11$ ) with various degrees of expertise (e.g., hired actors, student actors, staff). Several studies used mannikin ( $n = 2$ ) and virtual simulation ( $n = 2$ ) modalities (see Table 2 for definitions).

From analysis, two themes with subthemes were identified: processes for student learning, and preparedness for placement (see Table 4).

## Theme: Processes for Student Learning

This theme incorporates the various structural processes used in mental health simulation that supported student learning. The subthemes are realism in mental health simulation, active and observer student roles and debriefing and reflection.

### Subtheme: Realism in Mental Health Simulation

The degree to which simulation provides a realistic portrayal of a clinical situation is defined as realism (Lioce et al., 2020). Twelve studies reported on how realism was important to students' learning experience in mental health (Alexander, Sheen, Rinehart, Hay, & Boyd, 2018; Donovan & Mullen, 2019; Felton, Holliday, Ritchie, Langmack, & Conquer, 2013; Garcia-Mayor et al., 2021; Garvey, Willetts, Sadoughi, & Olasoji, 2021; Knutson de Presno, Ogard-Repal, & Fossum, 2021; Olasoji, Huynh, Edward, Willetts, & Garvey, 2020; Soccio, 2017; Stockmann & Diaz, 2017; Thompson Martin & Chanda, 2016; Verkuyl et al., 2017, 2018). Perceived realism was reported in qualitative ( $n = 6$ ), quantitative ( $n = 4$ ), and mixed methods studies ( $n = 2$ ) that included simulated participants (using same script and scenario) ( $n = 9$ ), mannikins ( $n = 1$ ), and virtual ( $n = 2$ ) simulation modalities. The simulated participant modality was reported to resemble real-life situations (Alexander et al., 2018; Garvey et al., 2021; Knutson de Presno et al., 2021; Olasoji et al., 2020; Soccio, 2017), providing students with sufficient psychological fidelity to develop their therapeutic mental health communication skills (Donovan & Mullen, 2019; Knutson de Presno et al., 2021; Olasoji et al., 2020; Thompson Martin & Chanda, 2016). Interactions with an actual person enabled students to develop the skills to demonstrate empathy and compassion (Alexander et al., 2018; Knutson de Presno et al., 2021), refine their mental health assessment skills (Alexander et al., 2018; Garvey et al., 2021), and develop the interpersonal skills required to manage challenging behaviours and conversations (Garvey et al., 2021; Olasoji et al., 2020). Interactive verbal communication with a simulated participant was one component students consistently rated (94%) as providing a high level of assistance for their learning (Donovan & Mullen, 2019). Although having simulated participants strengthened realism, this mode was found to be problematic for the depiction of paediatric self-harm, where aiming for realistic portrayal conflicted with the need to avoid negative effects on the young actors involved (Felton et al., 2013).

Only one study that used mannikin-based simulation reported on realism, where it was identified as a shortcoming with this modality (Stockmann & Diaz, 2017). Students identified "that therapeutic interaction was compromised by the mannikin's lack of nonverbal communication" (Stockmann & Diaz, 2017, p. 743). Studies using virtual simulation, where students watched a video of a simulated

**Table 3** – Summary of Studies Included in Review

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Alexander et al. (2018) Australia	To explore the attitudes of undergraduate Bachelor of Nursing students following a mental health simulation.	<i>Design:</i> Qualitative (final stage of mixed methods sequential explanatory design). <i>Data collection:</i> Thematic analysis of semistructured focus group.	<i>Participants:</i> n = 13 <i>Setting:</i> Undergraduate Bachelor of Nursing Students doing mental health.	<i>Condition/experience:</i> Schizophrenia. <i>Modality:</i> Simulated participant.	Educational benefits of sim include bridging theory to practice gap. Understanding mental health concepts and reducing preplacement anxiety.	Randomised sampling not possible; results cannot be generalised.	70%
Donovan and Mullen (2019) USA	1. Enhance active learning experience through simulated participants 2. Examine the efficacy of learned classroom therapeutic communication techniques applied to simulated participant mental health simulation experience. 3. What is the relationship between learned therapeutic communication techniques and a simulated participant experience?	<i>Design:</i> Pre- and post-test intervention design <i>Data collection:</i> Quantitative survey.	<i>Setting:</i> undergraduate Bachelor of Nursing students doing mental health. <i>Participants:</i> n = 116	<i>Condition/experience:</i> Depression & grief. <i>Modality:</i> Simulated participant.	Interaction between simulated participant and student increased psychological fidelity to a greater degree versus manikin. Simulated participants promote active learning environment which highlighted individualised confidence ( $p < .001$ ) in therapeutic communication skills through realistic process.	Authors cite sample size, suggested use of control group.	93%
Felton et al. (2013) UK	Not stated	<i>Design:</i> Qualitative pilot study. Written and oral feedback was combined for thematic analysis (themes and coding) <i>Data collection:</i> Pre- and postfocus groups and open questionnaire.	<i>Setting:</i> third year preregistration Master of Nursing Science students <i>Participants:</i> n = 16.	<i>Condition/experience:</i> Deliberate self-harm; paracetamol overdose. <i>Modality:</i> Simulated participant.	Simulation may be useful in developing skills for caring for young people. Authors note need for caution re. claims regarding impact of simulation to address gaps in nursing skills.	Authors note "...no attempt was made to measure the actual impact on students' skills development in the clinical setting" (p. 540).	50%

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Table 3 (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Garcia-Mayor et al. (2021) Spain	To examine the self-perceptions and satisfaction (& difficulties and barriers) of nursing students after their participation in a targeted mental health course in which the main specialist skills were acquired via clinical simulation.	<i>Design:</i> Quantitative, descriptive, transversal study. T-test. Descriptive & exploratory analyses; correlation analysis; multivariate analysis performed using linear regression. <i>Data collection:</i> 17-item questionnaire.	<i>Participants:</i> n = 138 <i>Setting:</i> Undergraduate Bachelor of Nursing students in mental health course.	<i>Condition/experience:</i> Anxiety, depression, obsessive-compulsive disorder & schizophrenia.  <i>Modality:</i> Simulated participant.	Simulation was successful in preparing students for mental health placement. Simulation decreased fear of interviewing real patients. Simulation was useful in preparing for clinical and made positive contribution to learning process. Participation of expert and assessment by peers was also considered rewarding.	Instrument not reported as tested. No control group. Authors suggest mixed methods approach next time. Authors suggest evaluating the mediating role of anxiety.	89%
Garvey et al. (2021) Australia	1. To explore undergraduate Bachelor of Nursing students' perspective about the influence of a mental health simulation in relation to their mental health clinical placement experience. 2. How the mental health simulation influenced their learning during clinical placement, confidence in providing care to mental health consumers and how relevant the simulations were to clinical placement.	<i>Design:</i> Qualitative - exploratory descriptive design. <i>Data collection:</i> Semistructured interviews transcribed and subjected to thematic analysis.	<i>Participants:</i> n = 14 <i>Setting:</i> Undergraduate Bachelor of Nursing students postmental health clinical placement.	Not stated	Students reported that simulation prior to placement enhanced their experience of placement.	Details of simulation are not reported.	70%

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Table 3 (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Holliday et al. (2020) UK	To evaluate the simulation by establishing whether student nurses' attitudes, confidence and self-efficacy were influenced by simulated learning in caring for someone who has self-harmed.	<i>Design:</i> Quantitative; uncontrolled pre- and postdesign using specific outcome measures <i>Data collection:</i> Attitudes towards self-harm measured using 13-item self-report questionnaire (previously reported instrument). Confidence measured through 7-Likert scale responses (previously reported instrument). Self-efficacy measured through 10-item SETH scale (previously reported scale). Pairs sample t tests to compare pre and post. Subgroup analysis to compare between groups.	<i>Participants:</i> n = 101 <i>Setting:</i> Undergraduate student nurses in the final 6 months of preregistration.	<i>Condition/experience:</i> Self-harm and overdose in paediatric consumer. <i>Modality:</i> Simulated participant.	Improved attitudes (worry $p < .01$ , negativity $p < .001$ , effectiveness $p < .001$ ) post-test. Improved confidence in caring for child/young person who self-harms at post-test ( $p < .001$ ). Improved self-efficacy toward child/young person who self-harms at post-test ( $p < .001$ ).	Authors do not speak to the validity of the scales they have used - they only comment that they have permission and they have been previously used. Contested link between self-efficacy and competent practice. Unable to know how long these attitudinal changes will last. Outcome measures have not been previously validated through psychometric testing. Authors suggest further qualitative testing.	78%
Kirkbakk-Fjaer et al. (2016) Norway	Describe Bachelor of Nursing students' evaluation of debriefing phase following high-fidelity human simulation in mental health nursing and to investigate if background data and group size influence experience.	<i>Design:</i> quantitative, descriptive and evaluative design <i>Data collection:</i> 20-item scale Likert 1-5 measured analysis, thoughts and feelings; learning and making connections; facilitator skill guidance. Cronbach $>0.91$	<i>Participants:</i> n = 105 <i>Setting:</i> Undergraduate Bachelor of Nursing students doing mental health.	<i>Condition/experience:</i> Depression <i>Modality:</i> Manikin (SimMan).	Smaller groups for debrief was associated with improved comfort and a perception that questions were answered ( $p < .01$ ). Authors recommend max 18 students/debrief. Debrief was evaluated as "very good."	Authors suggest differences presented concerning group size should be interpreted with caution.	75%

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Table 3 (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Knutson de Presno et al. (2021) Norway	This study aimed to describe the nursing students' perceptions of simulations with simulated participants in preparation for their clinical placement in mental health.	<i>Design:</i> Qualitative descriptive design. <i>Data collection:</i> Semistructured focus groups (×4) audio recorded and transcribed. Thematic analysis (Braun & Clarke).	<i>Participants:</i> n = 24 <i>Setting:</i> Undergraduate Bachelor of Nursing students' doing mental health.	<i>Condition/experience:</i> Mania & depression. <i>Modality:</i> Simulated patient.	Simulation before placement was valuable to improve interpersonal skills and contributed to increased perceptions of self-efficacy. This occurred because they adjusted apprehensions and assumptions about mental health nursing and gained new perspective on role of working in mental health.	Some staff had met students previously. 200 hours elapsed between simulation and focus groups. Suggest inclusion of people with lived experience to ensure authenticity.	70%
Ok et al. (2020) Turkey	To determine the impact of using simulated participants prior to clinical practice on the anxiety levels and communication skills of nursing students who attend mental health and psychiatric nurses' courses.	<i>Design:</i> Quantitative: Semiexperimental pretest-post-test control group design. <i>Data collection:</i> (Communication: Communication skill inventory (CSI). 45-items on 5-point Likert scale. Instrument has good internal psychometric properties. State-trait Anxiety inventory (STAI): two subscales 20-items each on 4-point Likert scale.	<i>Participants:</i> n = 85 <i>Setting:</i> Undergraduate Bachelor of Nursing students in 5th and 6th semester of 8 semester degree undertaking mental health course.	<i>Condition/experience:</i> Schizophrenia. <i>Modality:</i> Simulated participant.	Simulation decreased students' anxiety and improved their communication skills.	Students may have shared what to expect re. the intervention with each other which may have impacted results.	56%

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Table 3 (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Olasoji et al. (2020) Australia	To measure the impact of a simulation workshop on the skills and confidence of nursing students to engage with consumers experiencing a variety of mental illness in preparation for their mental health clinical placement.	<i>Design:</i> Mixed Methods study that only reports quant findings. <i>Pre/post-test cohort study design. Data collection:</i> Quant Pretest: 15-item instrument on 5-point Likert scale. Scale was developed by the authors and is an adaption/modification of several other existing/tested instruments. <i>Quant post-test:</i> 37-items on 5-point Likert scale. Internal consistency measured using Bock & Mislevy (1990).	<i>Participants:</i> n = 89 <i>Setting:</i> Undergraduate Bachelor of Nursing second year students in mental health unit.	<i>Condition/experience:</i> Schizophrenia, mania and borderline personality disorder. <i>Modality:</i> simulated participant.	Simulation with simulated participants had a positive impact on the student's ability to establish therapeutic engagement ( $p < .001$ ), develop assessment skills ( $p < .001$ ), and improve placement preparedness ( $p < .001$ ) and confidence.	Authors state small sample size. Simulated participant variation in performance may also be a limitation.	72%
Soccio (2017) USA	To determine whether Baccalaureate nursing students receiving MH sim as replacement for 25% of traditional clinical hours have equivalent or greater mental health knowledge and self-confidence compared to those attending traditional placement and not receiving simulation.	<i>Design:</i> Mixed methods pilot study <i>Data collection:</i> Quantitative: 20-item instrument (Mental Health Nursing Clinical Confidence Scale) on 4-point Likert scale which has previous reliability and good psychometric properties (Cronbach 0.93). <i>Qualitative:</i> 6 open-ended questions. Content analysis.	<i>Participants:</i> n = 48 (n = 24 control group/n = 24 intervention group) <i>Setting:</i> Baccalaureate Nursing students enrolled in psychiatric-mental health nursing course.	<i>Condition/experience:</i> PTSD, mania, hearing voices, psychosis, depression & self-harm. <i>Modality:</i> Simulated participant.	Simulation can replace clinical placement by 25% without changes to confidence and mental health knowledge. Students found simulation as helpful in learning how to manage behaviour.	Small sample size. Facilitator was both simulation instructor and tutor for classes.	88%

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**Table 3** (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Stockmann and Diaz (2017) USA	1. To explore undergraduate nursing students' experiences caring for the mental health needs of a transgender client through simulation. 2. What are the experiences of students while caring for the mental health needs of transgender clients through simulation? 3. How do students provide care to address the mental health needs of transgender clients through simulation? 4. How do students describe their self-awareness following simulation?	<i>Design:</i> Qualitative <i>Data collection:</i> Transcription of 60-minute focus groups subjected to content analysis	<i>Participants:</i> n = 20 <i>Setting:</i> Undergraduate Bachelor of Nursing students	<i>Condition/experience:</i> Transgender consumer with anxiety. <i>Modality:</i> Manikin.	Simulation allows students to assess and evaluate therapeutic communication of a person identifying as transgender in a safe environment.	Not stated. A few students participants had family/friends who identified as transgender. Use of manikin not listed as a limitation (e.g., realism, authenticity, etc.).	65%
Thompson Martin and Chanda (2016) USA	To introduce therapeutic communication simulations with particular emphasis on symptoms related to psychiatric disorders as a part of mental health theory and clinical course.	<i>Design:</i> Quantitative Quasi-experimental pre-postevaluation design. <i>Data collection:</i> 10-item pre- and post-test using "visual analogue scale" (0-100)	<i>Participants:</i> n = 28 <i>Setting:</i> Prelicensure Bachelor of Science in Nursing students undertaking mental health unit.	<i>Condition/experience:</i> Schizophrenia, depression, and bipolar disorder. <i>Modality:</i> Simulated participant.	Mental health simulation on therapeutic communication prior to clinical placement should be incorporated into undergraduate Bachelor of Nursing education. Educators are challenged by teaching communication skills. Students self-reported that their communication skills improved after simulation with simulated participants ( $p < .000$ ).	Does not appear to be a psychometrically tested tool. 35.7% of students had undertaken communication courses prior to simulation.	66%

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Table 3 (continued)

Author/s (Year) Country	Study Aims	Design and Methods	Settings and Participants	Mental Health Condition/Experience and Simulation Modality	Key Findings	Limitations	Quality Rating Score
Verkuyl et al. (2018) Canada	Not stated.	<i>Design:</i> Mixed methods <i>Data collection:</i> Quantitative: 18-items on 5-point Likert scale (plus 5 demographic questions). Reliability and validity have been obtained in other studies using this instrument (Cronbach >0.70). Qualitative: Semistructured individual interviews, taped and subjected to thematic analysis	<i>Participants:</i> n = 12 (n = 6 nursing students; n = 6 nursing faculty) <i>Setting:</i> Recruited from the following programs: Practical Nursing, Bachelor of Science in Nursing, Nursing Bridging - across three institutes.	<i>Condition/experience:</i> Depression. <i>Modality:</i> Virtual reality gaming simulation.	Virtual reality gaming simulation is an engaging, realistic and easy to use experience that participants found may have benefits for clinical placement and exam preparation.	Convenience sampling decreases generalisability of results. One round of usability testing only.	65%
Verkuyl et al. (2017) Canada	To explore students' experiences with virtual gaming simulation specific to its effects on their knowledge, confidence, and satisfaction.	<i>Design:</i> Qualitative <i>Data collection:</i> Semistructured focus groups subjected to thematic analysis.	<i>Participants:</i> n = 20 (in 3 focus groups). <i>Setting:</i> Bachelor of Nursing students in first year.	<i>Condition/experience:</i> A mental health and violence assessment. <i>Modality:</i> Virtual reality gaming simulation.	Virtual reality is an engaging modality that encourages participation in a realistic environment and permits learners to develop new knowledge.	No males in study. Authors suggest pre- and post-testing. Authors suggest debriefing to prevent the focus groups from becoming a pseudo debrief session.	86%

**Table 4** – Themes and Subthemes

Theme	Subthemes
Processes for student learning	<ol style="list-style-type: none"> <li>1. Realism in mental health simulation</li> <li>2. Active and observer student roles</li> <li>3. Debriefing and reflection</li> </ol>
Preparedness for placement	<ol style="list-style-type: none"> <li>1. Reduced theory-to-practice gap</li> <li>2. Improved attitudes and perceptions</li> <li>3. Increased confidence for placement</li> </ol>

participant, and then navigated a decision point, reported both positive and negative aspects on the realism of interpersonal communication (Verkuyl et al., 2017, 2018). Restricting communication to predetermined responses was noted as a limitation of this modality, with students sometimes indicating that instead of the available options they wanted to make up their own response (Verkuyl, Romaniuk, & Mastrilli, 2018). However, virtual simulation reportedly allowed the simulated participant's facial expressions and reactions to be clearly linked to students' choices at relevant decision-making points, with sufficient realism to elicit emotional responses from students (Verkuyl et al., 2017, 2018).

Realism was found across studies to contribute to student engagement, whether using simulated participants (Alexander et al., 2018; Olosoji et al., 2020) or virtual simulation (Verkuyl et al., 2017, 2018). When simulations used varied, realistic simulated participants, and authentic conditions, the resulting realism helped to demystify the role of nurses in mental health, giving students insight into the diversity of the encounters, shifts, and settings that they might operate within (Garvey et al., 2021; Knutson de Presno et al., 2021).

#### **Subtheme: Active and Observer Student Roles**

Students were commonly assigned to either an active role (being immersed in the situation and interacting with it), or an observer role (witnessing the active student engage with the simulated situation). Eight studies reported that both roles were important to student learning (Alexander et al., 2018; Donovan & Mullen, 2019; Felton et al., 2013; Garcia-Mayor et al., 2021; Holliday et al., 2020; Stockmann & Diaz, 2017; Thompson Martin & Chanda, 2016; Verkuyl et al., 2017, 2018). Simulation reportedly contributed to learning for students in both active roles (Donovan & Mullen, 2019) and for those observing peers (Alexander et al., 2018; Garcia-Mayor et al., 2021; Holliday et al., 2020; Olosoji et al., 2020). When assigned to either an observing or active role sequentially, students perceived their learning to be more effective when first able to observe peer performance (Garcia-Mayor et al., 2021).

In simulation with simulated participants, there were some challenging aspects with students being observed in active roles reporting stress and anxiety (Felton et al., 2013; Garcia-Mayor et al., 2021; Holliday et al., 2020; Thompson Martin & Chanda, 2016). Students reported feeling ill-equipped, fearful, and put “on the spot” (Thompson Martin & Chanda, 2016, p. 212), and some perceived that this inhibited their learning (Felton et al., 2013). Garcia-Mayor et al. (2021) found that the anxiety of being observed in an active role was not affected by whether observers were in the same room or watching remotely. Holliday et al. (2020) noted that the stress experienced by participants in active roles, however, did not negate a significant improvement in students reported self-efficacy postsimulation, although the possibility of a detrimental effect was not examined with a comparison group of active but unobserved participants. Active participant roles in virtual simulation also induced anxiety and fear in the absence of observers, however students noted that the lack of observers in this mode allowed them to feel safe and able to make mistakes without judgement from others (Verkuyl et al., 2017).

#### **Subtheme: Debriefing and Reflection**

Six studies reported on postsimulation debriefing as an important element of learning from simulation (Donovan & Mullen, 2019; Garcia-Mayor et al., 2021; Kirkbakk-Fjaer, Hedelin, & Larsen Moen, 2016; Olosoji et al., 2020; Soccio, 2017; Thompson Martin & Chanda, 2016). Donovan and Mullen (2019) reported that facilitated debriefing and reflection were perceived by students as the simulation component which contributed the most to their learning (96%). However, while Garcia-Mayor et al. (2021) identified a structured debrief used in their study, none of the six studies described the model, structure, or process of the debrief.

The benefits of the simulation debrief to student learning were reported primarily through qualitative responses. Olosoji et al. (2020) reported students perceived feedback and guidance from facilitators during a debrief contributed to their building of knowledge. The findings of Garcia-Mayor et al. (2021) and Thompson Martin & Chanda (2016) focussed more on professional (or nursing role) skills, with students reporting the debrief contributed to their learning and development of strategies to communicate. The relationship between anxiety and learning was also highlighted, with Garcia-Mayor et al. (2021) and Kirkbakk-Fjaer et al. (2016) finding that students perceived the debrief reduced their anxiety, resulting in a higher level of satisfaction with the simulation experience. Kirkbakk-Fjaer et al. (2016) reported the size of the student group as significant, with students in smaller debrief groups (9-17 participants) reporting greater satisfaction with having their questions answered than students in larger groups (21-24 participants).

Reflection and reflective learning were found to contribute significantly to student learning. Student reflection and reflective learning activities included a facilitated review of a recorded simulation scenario following a structured debrief ( $n = 1$ ) (Garcia-Mayor et al., 2021), reflecting on mistakes made ( $n = 1$ ) (Verkuyl et al., 2017) and the rationale for correct actions. This contributed to perceived student confidence in future practice-based situations with real mental health consumers ( $n = 1$ ) (Verkuyl et al., 2017).

### Theme: Preparedness for Placement

This theme incorporates the role of simulation in assisting in their preparation for mental health placement. The three subthemes are reduced theory-to-practice gap, improved attitudes and perceptions, and increased confidence for placement.

#### Subtheme: Reduced Theory-to-Practice Gap

Seven studies reported on the ways in which simulation facilitated bridging the theory-to-practice gap. They were qualitative ( $n = 4$ ), quantitative ( $n = 2$ ) and mixed methods ( $n = 1$ ) studies that encompassed virtual ( $n = 2$ ), simulated participant ( $n = 3$ ) and manikin simulation modalities ( $n = 2$ ) (Alexander et al., 2018; Garcia-Mayor et al., 2021; Garvey et al., 2021; Kirkbakk-Fjaer et al., 2016; Stockmann & Diaz, 2017; Verkuyl et al., 2017, 2018). Four studies reported that simulation was beneficial in the translation and consolidation of mental health nursing skills for application in a range of contexts including clinical placement and clinical examinations (Alexander et al., 2018; Garvey et al., 2021; Verkuyl et al., 2017, 2018). This connection between theory-to-practice was noted during active simulation and debrief (Kirkbakk-Fjaer et al., 2016).

Participation in simulation provided an opportunity to highlight elements of student learning that they reported were lacking, which prompted students to self-direct further studies (Alexander et al., 2018; Garcia-Mayor et al., 2021). Mental health simulation provided students with an opportunity to augment theoretical concepts they had learned about in class but did not yet have a real clinical experience of, to apply them to and understand how these skills and knowledge functioned in practice (Alexander et al., 2018; Garvey et al., 2021).

Qualitative findings indicated that participants were able to apply theoretical learning into a realistic applied situation that was safe and enhanced their learning (Alexander et al., 2018; Soccio, 2017; Verkuyl et al., 2017). Two studies indicated that students were able to link specific simulation experiences to real clinical encounters and that they benefited from this immensely (Alexander et al., 2018; Garvey et al., 2021). Simulation provided an opportunity to develop a better understanding of mental state exam by applying students' theoretical understandings to a simulated scenario (Alexander et al.,

2018; Garvey et al., 2021). Quantitative comparisons to determine difference between subgroups indicated that simulation helped make connections in learning ( $M = 4.36/5$ ) and that this process helped students make connections between theory and real-life situations ( $M = 4.38/5$ ) (Kirkbakk-Fjaer et al., 2016). Descriptive and exploratory analyses of results indicated that participating in simulation helped students learn ( $M = 4.72/5$ ) (Garcia-Mayor et al., 2021). Preparatory skills for placement were ranked highly by students having had simulation where they noted such skills would later be useful in mental health clinical practice ( $M = 4.78/5$ ) (Garcia-Mayor et al., 2021).

Alexander et al. (2018) provided an example of the reduction in theory-to practice gap. In their qualitative study with  $n = 13$  students, they explored students' experiences of simulation with simulated participants and found that students were able to contextualise theory content more meaningfully during simulation:

"I found that stimulation just with all the theory that I had done sort of made it make sense. It sort of really rounded of my knowledge ... and I could relate to it.

I guess use my knowledge in a practical way which helps me remember a bit better" (Alexander et al., 2018, p. 11).

#### Subtheme: Improved Attitudes and Perceptions

Six studies reported that mental health simulation was beneficial in reducing student anxiety about engaging with mental health consumers while also improving their attitudes and perceptions towards people living with mental illness (Alexander et al., 2018; Garvey et al., 2021; Holliday et al., 2020; Ok et al., 2020; Stockmann & Diaz, 2017; Thompson Martin & Chandra, 2016). These were qualitative ( $n = 3$ ) and quantitative ( $n = 3$ ) studies that encompassed simulated participant ( $n = 5$ ) and manikin simulation modalities ( $n = 1$ ). Thematic analysis of self-reported stigma towards people living with mental illness and attitudes towards mental health facilities were improved after simulation (Alexander et al., 2018; Knutson de Presno et al., 2021) and quantitative findings (Holliday et al., 2020) noted improvement on all three factors (effectiveness  $<0.001$ ; negativity  $<0.001$ ; worry  $<0.01$ ) in pre- and post-testing. Simulation helped participants challenge their assumptions about people with mental illness and mental health facilities (Knutson de Presno et al., 2021). Prior to simulation, student perceptions of people with mental illness were based on assumptions or media. The authors found that simulation allowed students to challenge these beliefs (Alexander et al., 2018); students were able to identify stigmatising attitudes in themselves and others and acknowledge that this was a barrier to engaging (Alexander et al., 2018; Stockmann & Diaz, 2017). Simulation allowed participants to formulate or adjust their mental imagery of people with mental illness, and to humanise them (Knutson de Presno et al., 2021;



Stockmann & Diaz, 2017). Four studies reported that anticipatory fear and anxiety related to placement was also reduced because of simulation and students reported they were less anxious and fearful about embarking on placement after simulation (Alexander et al., 2018; Ok et al., 2020; Stockmann & Diaz, 2017; Thompson Martin & Chandra, 2016).

Qualitative findings on the benefit of simulation in reducing anxiety related to engaging with mental health consumers on placement, noting that simulation provided a realistic insight into how a consumer might interact and respond (Alexander et al., 2018; Garvey et al., 2021; Stockmann & Diaz, 2017). One participant in the study conducted by Garvey et al. (2021, p. 97) identified how simulation positively impacted on placement anxiety:

“I think it took away that scared factor of what you were going to face” and “So when I was on placement, it meant that, yeah, I was able to deal with it. I didn’t have the anxiety. It (anxiety) never got to a point like that on placement—simulation was tougher than placement” (p. 98).

Quantitative findings also reported statistically significant reduction in student anxiety levels because of simulation (Ok, Kutlu, & Ates, 2020, p. 253) and a statistically significant improvement in “worry” attitudes post-simulation ( $p \leq .01$ ) (Holliday et al., 2020, p. 4). Further quantitative results (Thompson Martin & Chanda, 2016) also reported a decrease in student anxiety postsimulation-intervention ( $p = .000$ ).

### Subtheme: Increased Confidence for Placement

Eight studies reported that mental health simulation led to an increase in student confidence. This was reported from both quantitative studies (Donovan & Mullen, 2019; Holliday et al., 2020; McGough & Heslop, 2021; Olosoji et al., 2020; Soccio, 2017; Thompson Martin & Chanda, 2016) that measured confidence (typically a pre- and post-test survey) and qualitative studies with self-reports of increased confidence (Alexander et al., 2018; Garvey et al., 2021). The quantitative findings indicated that confidence improved in relation to therapeutic communication (Donovan & Mullen, 2019; Thompson Martin & Chanda, 2016), preparedness for clinical placement and interacting with mental health consumers (Olosoji et al., 2020), assisting mental health consumers to clarify treatment goals, providing education, and conducting mental state examinations (McGough & Heslop, 2021), and working with children who self-harm (Holliday et al., 2020). Soccio (2017) also found that replacing 25% of clinical hours with simulation would result in no difference in relation to confidence levels. Thompson Martin and Chanda (2016) evaluated a mental health therapeutic communication simulation with students who completed a Confidence with Communication Skill visual analogue scale pre- and postsimulation. The t test results indicated that

students’ confidence in communication was significantly improved, with mean scores pre- and post-test showing a significant change ( $p = .000$ ). The authors recommended the routine incorporation of simulation of therapeutic communication skills prior to mental health placements.

Findings from qualitative studies indicate that following simulation students experienced increased confidence in their preparedness for clinical placement (Alexander et al., 2018; Garvey et al., 2021) and interacting with simulated participants (Alexander et al., 2018). Students felt confident throughout their clinical placement, reporting that the registered nurses they worked with also commented on their level of confidence (Garvey et al., 2021). A participant in Garvey et al.’s (2021, p. 98) study said:

“I think if I walked into placement not having done the simulation, I would have come in with a very different view and a whole lot less confidence. So, reflecting on placement and the simulations after placement, yeah, I think was really good.”

## Discussion

The aim of this review was to investigate the state of knowledge on the use of mental health simulation in undergraduate/preregistration nursing education, with specific objectives to explore and synthesise the state of knowledge on the use of mental health simulation in undergraduate nursing programs and examine how mental health simulation impacts students’ educational preparedness for practice. The skills taught in mental health study units are important for all undergraduate nursing students, regardless of the field of nursing they eventually choose. The synthesis of research in this review found several integrated findings.

The role of simulation in reducing the theory-to-practice gap with nursing students undertaking their mental health studies was a key finding. A theory-to-practice gap occurs when there is a struggle to incorporate abstract concepts into a practical setting. Theory-to-practice gap is a common phenomenon in nursing because of the separation between practical skills and the theory and knowledge behind those skills (Greenway, Butt, & Walthall, 2019). Simulation has demonstrated effectiveness in bridging the theory-practice gap (Goh et al., 2021) and many studies in this review identified the importance of its role in minimising the gap. In mental health the nuance between these gaps is more complex because there are generally less technical skills required. Many studies reported similar overlapping learning outcomes and these skills are inherently nontechnical, yet arguable equally challenging to master.

Human behaviours and responses are so diverse and complex that not being attuned to these can be barriers to effective communication, particularly for a novice. Simulation can bridge this gap by providing a realistic en-

vironment where practice can occur until competency is achieved (Saifan et al., 2021). This process also fosters students' reflection and motivation to undertake self-guided learning when knowledge deficits are self-identified. The findings from this review support the role simulation plays in bridging this theory-to-practice gap and in addressing mental health knowledge and skills deficits. One of the benefits of simulation shown in this review is that students self-identified learning deficits, and simulation highlights the importance of critical thinking and reflection (Greenway et al., 2019). Critical thinking is an important nursing skill resulting in the nurse initiating an evidence-based and considered response to a situation. A review on recent graduate nurses found many were deficient in "soft" skills, including critical thinking (Song & McCreary, 2020). Given that the mental health nursing component of a nursing degree is where many of these "soft" skills are taught, there is a need to address this skill deficit at an undergraduate level.

The realism (the degree to which the scenario represents real situations) of the simulated experience is also an important aspect to simulation development, as this review has found. To immerse themselves into a scenario, students need to perceive the situation as realistic and genuine (Felton & Wright, 2017) and in mental health the best way to achieve this is with an actual simulated participant. This is critical, as when a simulation lacks realism, it may increase stigmatising perceptions in mental health. Kidd, Tusaie, Morgan, Preebe, and Garrett (2015) found that audio recordings of voices to simulate hallucinations increased a desire for social distancing and stigma in their student nurse participants. One of the recommendations from their study was to supplement such experiences with real-person contact, to humanise people with mental illness (Kidd et al., 2015).

As this review has found, mannikin and part-task trainers do not provide the same degree of realism as simulated participants do and should be used with caution. While mannikins have been identified as increasing fidelity in medical simulations (Brown & Tortorella, 2020), the same cannot be said for mental health simulation. When a genuine, human response is required, only a human being can do this justice. A mannikin, for all its technological advances, cannot mimic the facial expressions humans exhibit and these expressions are necessary for teaching interpersonal and mental state assessment skills. Generating realism through simulated participants is an important factor identified in this review, and we recommend the inclusion of real person encounters in mental health simulation. Of similar importance is the need for consumer peer review of the simulation scenario prior to implementation. This enhances the realism of the simulation, and ensures the scenario is authentic, and representative of real patient experiences. In mental health education in nursing, the inclusion of patient voice is considered an essential component (Horgan et al., 2020).

Another key finding from this review is the occurrence of high levels of student anxiety related to mental health clinical placement. Student anxiety has many possible causes but is often a result of a lack of confidence in their skills (Simpson & Sawatzky, 2020) which in this case, may be exacerbated by a lack of practice engaging with people who have a mental illness. Consequences of this anxiety include avoidance behaviours (Simpson & Sawatzky, 2020) and poorer academic outcomes (Skinner, Kendall, Skinner, & Campbell, 2019). These factors, however, are impacts on the *student*, and it must be noted that these same factors can also have negative outcomes on mental health consumers, who can be vulnerable and stigmatised.

Stigmatising perceptions and mental health stereotyping in nursing students is a significant factor in this anxiety when undertaking a mental health placement (Patterson et al., 2018) and it is important to develop preplacement activities that challenge these negative behaviours, to strengthen student attitudes and positively influence mental health care provision. Stigma has many adverse impacts on people, including a reluctance to seek mental health treatment (Holder, Peterson, Stephens, & Crandall, 2018) and educators have a responsibility to ensure that students are well prepared to enter such a placement. This review has identified that simulation can play an important role in reducing stigmatising attitudes and behaviours, and its ongoing inclusion in curriculum is important in ensuring people living with mental health issues can access health care that is free from prejudice.

## Recommendations

The inclusion of evidence-based simulation with simulated participants that has been developed with consumer consultation should be embedded into mental health units in undergraduate nursing degrees. It is recommended the focus of these simulations be on advanced interpersonal skill development and mental health assessment skills, which can be further consolidated when students embark on their placements. As demonstrated, in addition to mental health simulation supporting student learning, it also challenges stigmatising attitudes and negative perceptions. It is important to acknowledge that while simulation has been found to be a valuable educational modality for preparing students for placement in this review, it does not and should not replace provision of placements in mental health settings.

## Strengths and Limitations

This review provided a rigorous and systematic appraisal of empirical research on simulation in mental health nursing education. The limitations of the evidence in this review include the absence of randomised sampling and the

low sample size in most of the quantitative studies. Several studies did not use validated instruments, and some pilot studies were included. Further studies, particularly randomised control trials, are needed to rigorously demonstrate the effectiveness of simulation. One of the strengths of this review is the exclusion of papers that did not meet quality appraisal.

## Conclusion

There remains an ongoing need for rigorous simulation research in mental health nursing, in particular adopting simulation with simulated participants. Therapeutic communication skills, including advanced interpersonal skills required for effective mental health care provision, are an essential component of an undergraduate nursing degree and simulation is an innovative teaching modality that is well suited to teach these skills. Student nurses need to practice interpersonal skills in a safe environment, where the opportunity to do so has no risk of harm for actual mental health consumers in the same manner that technical nursing skills are practised first on mannikins. By supplementing mental health theory with simulation prior to placements, students will have the opportunity to alleviate preclinical placement anxiety and consolidate their novice communication skills, while also reducing stigmatising attitudes to mental illness.

## Authorship Statement

All authors listed in this manuscript meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors. All authors agree with the content in this manuscript.

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