



## Adverse health events associated with clinical placement: A systematic review<sup>☆</sup>



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### ARTICLE INFO

#### Keywords:

Student placement  
Clinical competence  
Adverse health care event  
Students  
Health occupations  
Occupational safety  
Occupational hazards

### ABSTRACT

**Objective:** Clinical placement is a fundamental aspect of student learning and skill development across healthcare disciplines. However, participation in clinical placements can also present significant risk to students. This systematic literature review sought to examine the range of risks and hazards encountered by students across healthcare disciplines during their clinical placements.

**Design:** The Preferred Reporting Items for Systematic Reviews and Meta-Analysis reporting guidelines were utilised in conducting this exploratory systematic review.

**Data sources:** The CINAHL Complete, Medline Complete, and PsycINFO databases were searched. Reference lists of eligible records obtained via database searching were screened, and a supplementary key author search was conducted. Research published between 2013 and 2018 and conducted in the context of comparative international healthcare systems was the focus of this study.

**Review methods:** Study titles and abstracts were screened, and the full text of potentially relevant records was perused. Records meeting key eligibility criteria by addressing risk posed to students in healthcare disciplines within a clinical placement context were included in the final synthesis.

**Results:** The search identified 46 eligible records. The literature highlighted the worrying trend that students, most notably in the nursing discipline, can be exposed to a wide range of risks and adverse health events during clinical placement.

**Conclusions:** As risks in unpredictable clinical environments cannot be eradicated, this review demonstrated a critical need for educative action to enable students to competently and confidently manage risks, and to reduce occurrence of adverse health events.

### 1. Introduction

Students across healthcare participate in clinical placement, often as a compulsory element of their professional training. Clinical placement is widely acknowledged as a fundamental aspect of learning and professional development for students undertaking tertiary education in a healthcare discipline. Placement enables students to integrate theoretical knowledge with clinical practice and to develop skills and competencies in an applied context (Levet Jones et al., 2006; Yiend et al., 2016). During clinical placement, students are introduced to the professional practices, values, and ethics of their field, scaffolding their future work as a healthcare clinician (Yiend et al., 2016). Formative clinical experiences can also impact long-term career aspirations (Boyd-

Turner et al., 2016; McCall et al., 2009).

Simultaneously, the myriad of challenges associated with clinical placement across international healthcare are increasingly being acknowledged (Taylor et al., 2017; Department of Health and Human Services, 2017; Driver, 2013; McBride et al., 2015; Council of Ontario Universities, 2013; Smith et al., 2016). In addition to organisational challenges, such as a paucity of appropriate placements and supervisors, and restricted learning opportunities (Scott et al., 2011; Healthcare Management Advisors, 2014), clinical placement presents a range of risks to students across the healthcare industry (Department of Health, 2011; Taylor et al., 2017). Notably, preliminary research has indicated that students can be directly exposed to violence, sexual harassment, and verbal abuse whilst on placement (Sheen et al., 2012;

<sup>☆</sup> This work was supported by the Australian Government Office for Learning and Teaching [ID16-5270]. The views expressed in this project do not necessarily reflect the views of the Australian Government Office for Learning and Teaching. The Australian Government Office for Learning and Teaching was not involved in the design, collection, analysis, or interpretation of the study.

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<https://doi.org/10.1016/j.nedt.2019.01.024>

Received 20 July 2018; Received in revised form 10 December 2018; Accepted 28 January 2019

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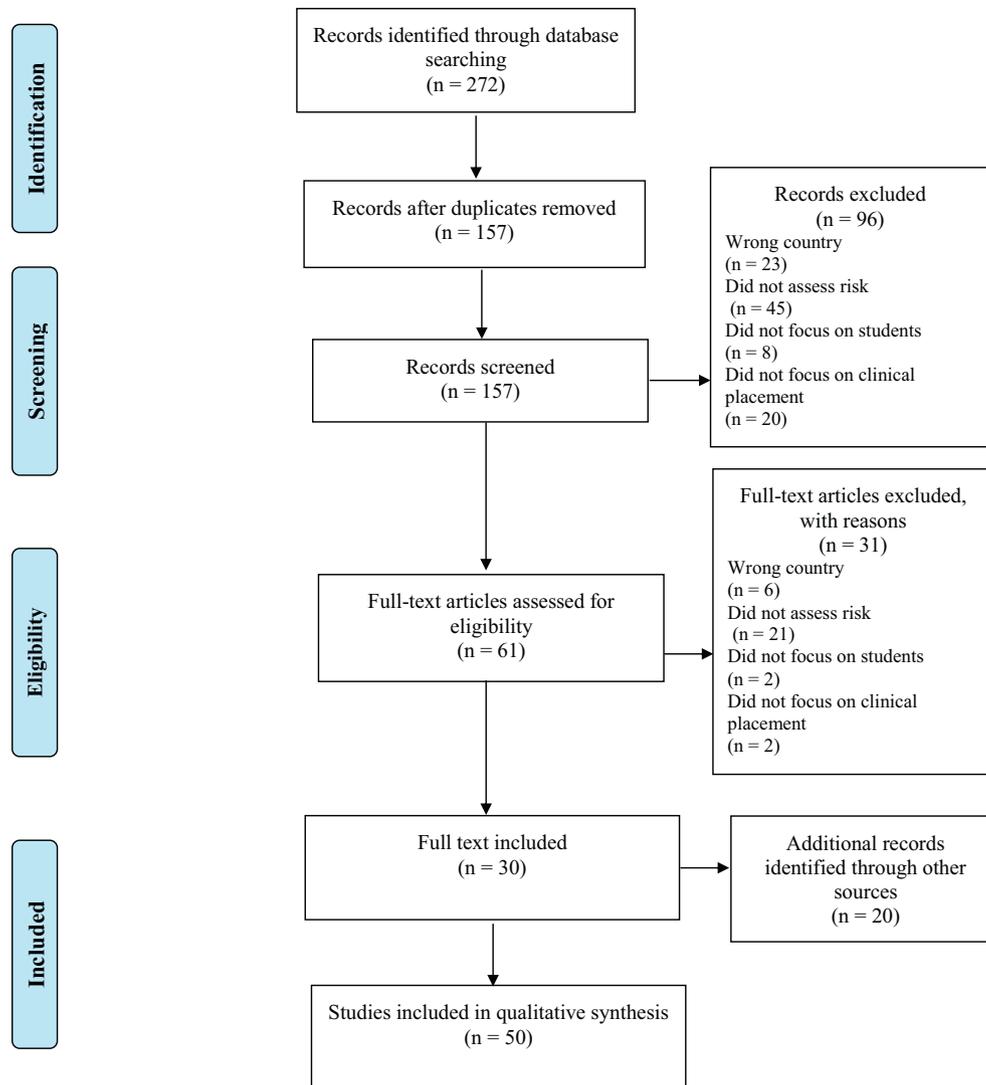


Fig. 1. PRISMA flow diagram (Moher et al., 2009) for systematic search of risks to students on clinical placement.

McManamy et al., 2013). These findings indicate a need for increased emphasis on risk management strategies to protect students within clinical placement contexts.

The literature examining risks to students on clinical placement is complex. Healthcare training and education operates within rapidly changing landscapes. A broad array of placement-related issues has been explored from multiple perspectives (i.e. universities, placement providers, supervisors, clinical staff, and students) and across many healthcare disciplines. Clarity around this topic is also marred by differing terminologies used across research to describe the concepts of 'clinical placement', 'supervision', and 'risk'. To the authors' knowledge, systematic review of research examining the risks faced by students completing clinical placement, has not yet been undertaken. Given the importance of assuring student safety and competency, clinical placement stakeholders would benefit from a clear conceptualisation of key challenges presented to students during their training. This would enable the development of training models designed to equip students to competently and confidently manage any risks presenting during placement. As a first step, a research review is needed to explore and summarise the breadth of placement problems, hazards, and risks raised in the literature.

The objective of the current study was to address this gap in the literature by exploring the range of risks and hazards encountered by students across healthcare disciplines during clinical placement. To best

capture placement-related risks arising in the current educational climate, all literature published from 2013 and onwards was examined.

## 2. Method

### 2.1. Data sources

The CINAHL Complete, Medline Complete, and PsycINFO databases were searched. Search terms, searched within abstracts, included: (AB ("health" OR "health care" OR "healthcare")) AND (AB("student\*" OR "trainee\*")) AND (AB("clinical placement\*" OR "clinical practical\*" OR "clinical practicum" OR "clinical practice placement\*" OR "clinical fieldwork" OR "clinical rotation")) AND (AB(risk\* OR "occupational health and safety" OR "occupational risk\*" OR "adverse health event\*" OR "occupational safety" OR "hazard" OR "expos\*" OR "problem\*" OR "challenge\*")). An English language limiter was used.

### 2.2. Eligibility criteria

Studies investigating an element of risk faced by students during clinical placement were eligible for inclusion. Key study eligibility criteria included:

- 1) an investigation of risk to students;

- 2) a focus on students undertaking training in a healthcare discipline; and,
- 3) a clinical placement context.

All disciplines in which healthcare students were required to complete clinical placements as a part of their professional training were eligible. Studies published between 2013 and 2018 inclusive were eligible for inclusion. Research conducted in the context of all comparative international health systems, including Australia, New Zealand, the United States, Canada, and the United Kingdom, were the focus of this study.

### 2.3. Article screening

Following removal of duplicates, abstracts were screened. The full texts of potentially relevant studies were located and assessed against the eligibility criteria listed above. The reference lists of resulting articles were visually appraised; potentially relevant papers were screened for inclusion.

### 2.4. Supplementary articles

As this review was exploratory, seeking to capture the breadth of risks posed to students engaging in clinical placement, a key author search was conducted. Prolific authors examining occupational risks to students during clinical placements were identified as: Birks, Budden, Park, McKenna, Boyle, Levett-Jones, Cant, Hamshire, Wibberley, and Everett. The search term ‘clinical placement’ was used in conjunction with author names; results were assessed against inclusion criteria.

## 3. Results

The search yielded a total of 50 records for inclusion in the review. Of these, eight records were located via reference list searching, and twelve records were found via key author search. The step-by-step process determining the inclusion of articles is illustrated within the PRISMA flowchart depicted in Fig. 1. Appendix A details the reasons for exclusion of papers from the review.

### 3.1. Data extraction

Relevant data was extracted from the full text of studies included in this review. Extracted data pertaining to healthcare discipline, country of origin, sample, risk/s examined, and data collection method is presented in Table 1. The literature captured a diverse range of risks posed to students undertaking clinical placement. Studies were conducted across a variety of healthcare disciplines, but predominantly among nursing students. As outlined in Table 2, study findings were synthesised into six key risk domains: psychological risk, risk of abuse, physical risk, impact of supervision, barriers to reporting, and barriers to competency.

### 3.2. Psychological risk

Students undertaking training across healthcare disciplines were shown to be vulnerable to psychological distress resulting from clinical placement experiences. Psychological risks identified in the literature included stress (Chernomas and Shapiro, 2013; Galvin et al., 2015; McKenna et al., 2017), anxiety (Budden et al., 2017; Wang et al., 2017; Birks et al., 2017a; Minton et al., 2018), depression (Minton et al., 2018), burnout (Cook et al., 2014; Galvin et al., 2015), and preclinical post-traumatic stress (Shapiro et al., 2018). Risk of moral distress regarding patient treatment (Bickhoff et al., 2017) and maladaptive coping (Galvin et al., 2015) among students was also noted. Galvin et al. (2015) conducted a qualitative investigation into placement stressors posed to mental health nursing students; emotional demands,

long hours, and feelings of incompetence were reported as key placement stressors. Students also identified the psychological impact of juggling academic and placement demands, critical attitudes of clinical staff, and lack of debriefing following clinical errors (Galvin et al., 2015). Increased responsiveness to students' emotional wellbeing throughout their clinical training appears to be warranted.

Studies exploring psychological risk highlighted that unique placement contexts can present distinct challenges to students. Most notably, placement environments with a high prevalence of bullying and abuse (such as hospital-based settings, as shown in Minton et al., 2018) are associated with psychological distress including loss of confidence, panic attacks, depression, and anxiety (Budden et al., 2017; Cook et al., 2014; Scott et al., 2015; Shapiro et al., 2018; Birks et al., 2017a; McKenna and Boyle, 2016; Minton et al., 2018). Students from culturally diverse backgrounds were also shown to be at increased risk of distress whilst on placement (Wang et al., 2017; McKenna et al., 2017). Finally, students completing clinical placements abroad can undergo culture shock and a sense of powerlessness; however, these experiences were shown to ultimately engender a sense of personal growth (Murray, 2015; Gower et al., 2017). This pool of research reveals a need to help students navigate often challenging internal reactions to clinical placement experiences.

### 3.3. Risk of abuse

Student exposure to abuse whilst on clinical placement emerged as a salient topic in the literature. Students were shown to encounter physical abuse (Birks et al., 2017a; Boyle and McKenna, 2016; Budden et al., 2017; McKenna and Boyle, 2016; O'Reilly and Milner, 2015), verbal abuse (Boyle and McKenna, 2016; Boyle and McKenna, 2017; Koch et al., 2015; McKenna and Boyle, 2016; McKenna et al., 2017; O'Reilly and Milner, 2015), sexual harassment (Birks et al., 2017a; Boyle and McKenna, 2017; Koch et al., 2015; McKenna and Boyle, 2016; Minton et al., 2018) and bullying (Birks et al., 2017b; Budden et al., 2017; Hamshire et al., 2013; Minton et al., 2018) in clinical contexts. Several studies reported student exposure to more covert forms of abuse such as intimidation (Boyle and McKenna, 2016; McKenna and Boyle, 2016), discrimination (Borrott et al., 2016; Koch et al., 2015; Koch et al., 2014; McKenna et al., 2017), and humiliation (Scott et al., 2015; Birks et al., 2017b). Although prevalence estimations differ across studies, there is consensus that student vulnerability to abuse during clinical placement is an enduring and urgent problem.

Risk of abuse was shown to permeate a variety of clinical settings, and to yield significant consequences for students. A culture of abuse was demonstrated across nursing (e.g. Budden et al., 2017), medicine (e.g. Mavis et al., 2014), paramedicine (e.g. Boyle and McKenna, 2017), and midwifery (e.g. Hamshire et al., 2013) disciplines. Three studies identified the patient or patient's family as the aggressor, whilst eight studies identified clinical staff or mentors as aggressors. Budden et al. (2017) examined bullying experiences among 888 nursing students undertaking clinical placement in Australia. They found that 50% of participants had been subjected to bullying or harassment in the past 12 months; 25% of harassment experiences had been perpetrated by mentors (Budden et al., 2017). Abusive incidents often spurred psychological maladjustment and thoughts of attrition in students (Budden et al., 2017). Victim consideration of attrition or changing profession following an abusive episode was noted by others (McKenna and Boyle, 2016; Hamshire et al., 2013; Birks et al., 2017a; Minton et al., 2018). Studies investigating this issue highlight the worrying trend that exposure to overt and covert violence, often at a systemic level, may be the norm rather than the exception for students undertaking clinical placement.

### 3.4. Work-related physical risk

Several studies suggested that students may be vulnerable to

**Table 1**  
Summary of papers examining risks to students during clinical placement.

Authors (year)	Healthcare discipline	Country	Sample	Data collection method	Risk/s examined
Betony and Yarwood (2013)	Nursing	New Zealand	14 placement provider institutions	Self-designed questionnaire comprising 9 questions, including one open-ended question	Barriers to competency
Bickhoff et al. (2017) <sup>a</sup>	Nursing	Australia	15 studies meeting inclusion criteria	Databases searched: CINAHL, Proquest, PsycINFO	Impact of supervision Psychological risk
Birks et al. (2017a)	Nursing	Australia	430 students	Student Experience of Bullying During Placement; study reports on qualitative components only	Risk of abuse Barriers to reporting
Birks et al. (2017b)	Nursing	Australia and UK	833 Australian students 561 UK students	Student Experience of Bullying During Clinical Placement	Psychological risk Risk of abuse
Blakely and Aveyard (2017) <sup>a</sup>	Nursing	UK	8 studies meeting inclusion criteria	Databases searched: British Nursing Index, CINAHL, PubMed	Barriers to reporting Impact of supervision Barriers to competency
Borrott et al. (2016)	Nursing	Australia and Canada	423 Australian students 53 Canadian students	Need to Belong Scale, Belongingness Scale: Clinical Placement Experience, Nursing Workplace Satisfaction Questionnaire	Risk of abuse
Boyle and McKenna (2016)	Midwifery Paramedicine	Australia	136 students	Paramedic Workplace Violence Exposure Questionnaire	Risk of abuse
Boyle and McKenna (2017) Bradbury-Jones (2015)	Paramedicine Nursing	Australia UK	133 students 55 students	Paramedic Workplace Violence Exposure Questionnaire Focus groups	Risk of abuse Barriers to competency
Bradbury-Jones and Broadhurst (2015)	Midwifery Nursing	UK	55 students	Focus groups with a discussion guide	Barriers to competency
Budden et al. (2017)	Midwifery Nursing	Australia	888 students	Student Experience of Bullying During Clinical Placement	Psychological risk Risk of abuse
Chernomas and Shapiro (2013)	Nursing	Canada	442 students	Depression Anxiety Stress Scales, Demographic Questionnaire, World Health Organization Quality of Life Questionnaire abbreviated version, extended by authors	Barriers to reporting Psychological risk Impact of supervision
Clarke (2015)	Nursing	UK	13 students	Semi-structured focus groups	Physical risk
Cook et al. (2014)	Medicine	US	564 students	2 self-designed questions pertaining to mistreatment, Maslach Burnout Inventory (two-item version)	Impact of supervision Psychological risk
Crossley and Vivekananda-Schmidt (2015) <sup>a</sup> Daly et al. (2013)	Medicine	UK	–	–	Risk of abuse Barriers to competency
Davenport et al. (2017) <sup>a</sup>	Medicine	Australia	24 students 8 General Practitioners 10 hospital clinicians 69 studies meeting inclusion criteria	Semi-structured interviews	Barriers to competency Barriers to reporting
Fernando et al. (2016)	Speech Language Pathology Medicine Nursing	Australia	18 medical students 31 nurses 1 case manager 12 students	Databases searched: Proquest, CINAHL, OVID Observations, semi-structured interviews	Impact of supervision Barriers to competency
Galvin et al. (2015)	Nursing	Canada	68 recent graduates	Semi-structured interviews	Psychological risk Physical risk
Gilligan et al. (2014)	Nursing Medicine Pharmacy	Australia	25 students 15 students	Focus groups	Impact of supervision Barriers to competency
Gower et al. (2017) Greenstock et al. (2013)	Nursing Medicine	Australia Australia	7 students	Semi-structured interviews Focus groups Interviews	Psychological risk Barriers to competency Impact of supervision
Hamshire and Wibberley (2017)	Physiotherapy	UK	–	–	–

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Table 1 (continued)

Authors (year)	Healthcare discipline	Country	Sample	Data collection method	Risk/s examined
Hamshire et al. (2013)	Nursing Midwifery Allied Health (disciplines not specified)	UK	999 students	Self-designed survey; study reports on final component of survey relating to attrition, including a qualitative component	Risk of abuse Physical risk Impact of supervision Barriers to competency Barriers to competency Impact of supervision
Jack et al. (2018)	Nursing	UK	1425 students in quantitative component 22 students in qualitative component	Self-designed survey assessing placement learning experiences	Barriers to competency Barriers to competency Impact of supervision
Koch et al. (2015) <sup>a</sup>	Nursing	Australia	23 studies meeting inclusion criteria	Databases searched: CINAHL, PubMed, Academic Search Complete, MEDLINE, Education Search Complete, Health Source: Nursing/Academic Edition, Science Direct, Scopus.	Risk of abuse Impact of Supervision Barriers to competency
Koch et al. (2014)	Nursing	Australia	704 nursing students 165 clinical staff	English Language Acculturation Scale; Self-designed survey investigating socio-demographic factors, clinical confidence, diversity, cultural competence, clinical placement experiences	Psychological risk Risk of abuse Impact of supervision Barriers to competency
Lalloo et al. (2013)	Dentistry	Australia	100 students	Self-designed survey pertaining to rural clinical placement experiences; students' reflective journals submitted as compulsory clinical placement assessment	Barriers to competency Barriers to competency Barriers to competency
Linn et al. (2015)	Nursing Social Work Medicine	US	4 nursing students 8 social work students	Focus groups	Barriers to competency
Mavis et al. (2014)		US	Students enrolled in medical courses across the US between 2000 and 2011; ranging between n = 9440 and n = 14,159. 12 nursing students 8 pharmacy students	Medical School Graduation Questionnaire	Risk of abuse Barriers to reporting
McCloughen and Foster (2018)	Nursing Pharmacy	Australia		Sample derived from participant scores in GENOS inventory (concise version) in Phase 1; semi structured interviews conducted and reported on in present study	Impact of supervision
McKenna and Boyle (2016)	Midwifery	Australia	52 students	Paramedic Workplace Questionnaire	Risk of abuse Barriers to reporting Psychological risk
McKenna et al. (2017) <sup>a</sup>	Miscellaneous healthcare disciplines Nursing	Australia New Zealand	13 studies meeting inclusion criteria 296 students	Databases searched: CINAHL, Medline, Scopus, Proquest and ERIC, grey literature, reference lists and Google Scholar. Student Experience of Bullying During Clinical Placement	Risk of abuse Psychological risk Risk of abuse Barriers to reporting Psychological risk Impact of supervision Barriers to competency
Minton et al. (2018)					
Murray (2015) O'Reilly and Milner (2015)	Nursing Nursing Dietetics Medicine Occupational Therapy Social work Nursing	US Australia	6 students 13 students 12 clinical supervisors	Semi-structured interviews Semi-structured focus groups	Risk of abuse Impact of supervision
Rohde et al. (2014)		US	87 students	Nasal swabs; self-designed questionnaire assessing risk factors to <i>Staphylococcus aureus</i> and Methicillin resistant <i>Staphylococcus aureus</i>	Physical risk
Ryland and Graham (2014)	Mental Health Nursing	UK	6 students	Semi-structured focus interviews	Impact of supervision Barriers to competency Barriers to competency
Salamonson et al. (2015) Scott et al. (2015)	Nursing Medicine	Australia Australia	213 students 146 students	Clinical Learning Environment Inventory Self-designed survey assessing teaching by humiliation	Impact of supervision Risk of abuse Psychological risk

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Table 1 (continued)

Authors (year)	Healthcare discipline	Country	Sample	Data collection method	Risk/s examined
Shapiro et al. (2018)	Midwifery	Australia	52 students	Paramedic Workplace Violence Exposure Questionnaire	Barriers to reporting Psychological risk
Spiers and Harris (2015) <sup>a</sup>	Allied health disciplines	Australia	28 empirical studies; and 22 grey literature texts meeting inclusion criteria	Databases searched: CINAHL, Medline, ERIC, PsycINFO, and Scopus	Risk of abuse Barriers to competency
Stacey et al. (2016)	Nursing	UK	8 students 12 practice assessors	Participant diaries; interviews; student practice documentation; focus groups with clinical assessors	Impact of supervision Barriers to competency
Steven et al. (2014)	Nursing	UK	24 nursing students 4 nurses 8 clinical supervisors	Program documents from nursing curricula; semi-structured interviews; observations; documents pertaining to policy and procedure	Impact of supervision Barriers to competency Physical risk
Tella et al. (2015)	Nursing	UK	4 nurse and risk managers 6 service users 158 students	Patient Safety in Nursing Education Questionnaire	Barriers to competency
van de Mortel et al. (2017)	Nursing	Australia	18 students in quantitative component 16 students in qualitative component	Self-designed survey assessing clinical placement experience; telephone interviews	Physical risk Impact of supervision Physical risk
Walker et al. (2016)	Medicine	Australia	606 students	Self-designed questionnaire investigating influenza vaccination history and attitudes	Physical risk
Wang et al. (2017)	Nursing	Australia	6 Chinese students	In-depth interviews, focus group discussions, field notes and observations	Psychological risk Physical risk
Ward (2013a)	Nursing Midwifery	UK	13 nursing students 15 midwifery students	Semi-structured interviews	Physical risk
Ward (2013b)	Midwifery	UK	15 students	Semi-structured interviews	Physical risk Impact of supervision

– not reported.

<sup>a</sup> Literature review.

**Table 2**  
Risk domains emerging from review.

Risk domain	Type of risks	# of studies
Psychological risk	Stress, distress, adjustment, anxiety, loss of confidence, sadness, burnout, fear, flashbacks, dread	14
Risk of abuse	Physical abuse, verbal abuse, sexual harassment, aggression, racism, discrimination, bullying	17
Physical risk	Aspects of the physical environment resulting compromising student occupational health and safety	9
Impact of supervision	The effectiveness of supervisors, access to supervision, and the impact of supervision upon students' clinical training (where supervision is provided by clinical supervisors, clinical staff, clinical educators, mentors, and preceptors)	21
Barriers to reporting	Prevalence of reporting following incidents; barriers to avenues for reporting of inappropriate, unsafe, or unethical placement-related incidents	7
Barriers to competency	Limitations in student learning and educational experiences during placements, placing students at risk of being inadequately prepared for clinical practice	21

occupational health and safety risks during clinical placement. Studies addressed risk of manual handling (Clarke, 2015), non-compliance to infection control precautions (Ward, 2013a; Ward, 2013b) and vaccinations recommendations (Walker et al., 2016), as well as risk of staphylococcal species incidence (Rohde et al., 2014) among students. Of 606 students responding to an online self-report survey in a study by Walker et al. (2016), 13% of students responded “incorrect” to the statement “I am at risk of influenza during my clinical placements”, and students with limited clinical experience were 3.47 times less likely to be vaccinated than their more experienced peers. Of note, several studies gave voice to students' concerns that their physical safety was compromised during clinical placement. Risks such as choking hazards (van de Mortel et al., 2017), traveling alone at night via public transport to access night shifts (Hamshire et al., 2013), and staff shortages (Galvin et al., 2015; Steven et al., 2014), were noted. Crucially, lack of clarity around workplace policy and procedure and risk management was raised in two studies (Galvin et al., 2015; Steven et al., 2014), highlighting a need for improved education on the topic. The literature suggests that adequate mechanisms may not be in place to protect students from workplace risks and hazards.

### 3.5. Impact of supervision

A collection of studies explored the seminal influence of supervision, and conversely, its associated risks for students. For the purposes of this review, supervision was conceptualised broadly to include student interactions with mentors, clinical staff, preceptors, or supervisors within a clinical placement framework. Negative attitudes among mentors was resoundingly reported across the literature as a challenging placement experience for students (van de Mortel et al., 2017; Ward, 2013b; Koch et al., 2014; Koch et al., 2015; Hamshire et al., 2013; Galvin et al., 2015; Blakey and Aveyard, 2017). The literature emphasised the deleterious impact of power imbalances (Bickhoff et al., 2017; McCloughen and Foster, 2018; Stacey et al., 2016; Steven et al., 2014; Fernando et al., 2016), lack of support (Chernomas and Shapiro, 2013; Hamshire et al., 2013; Koch et al., 2014; Koch et al., 2015; Minton et al., 2018; Jack et al., 2018), and poor role modelling (Bickhoff et al., 2017; Blakey and Aveyard, 2017; Ward, 2013b) in supervision upon student morale, motivation, sense of safety, and learning. Insufficient access to supervisors or lack of continuity in supervision was noted in six studies (Clarke, 2015; Daly et al., 2013; van de Mortel et al., 2017; Hamshire and Wibberley, 2017; Salamonson et al., 2015; Jack et al., 2018). In a large-scale reflection of this ubiquitous concern, 59% of 1425 students surveyed in a UK-based study endorsed the statement: “mentors did not have time to teach students” (Jack et al., 2018, p. 932). Cultural and linguistic challenges associated with supervision for international students were also observed (O'Reilly and Milner, 2015). Crucially, the pivotal role of the interpersonal relationship between student and supervisor was noted. In a phenomenological study led by Rylance and Graham (2014) investigating student perceptions of care planning during clinical placement, the role of the supervisory relationship was detected as a central theme. Student

confidence in their supervisor was shown to foster student learning and self-efficacy, whereas a poor supervisory relationship was shown to engender a lack of student confidence (Rylance and Graham, 2014). Studies examining supervision thus delineate its central role in student learning, whilst also signposting the risks it presents to supervisees.

### 3.6. Barriers to reporting

A small pool of studies investigated student reporting of events in which they are subjected to inappropriate, unsafe, or unethical behaviour whilst on placement. Overwhelmingly, studies highlighted that students hesitate, and often fail, to formally report incidents within their university or clinical facility. For instance, Shapiro et al.'s (2018) assessment of student responses to workplace violence revealed that 88.8% of victims never filed a formal incident report, opting rather to informally debrief with a colleague. Further, Budden et al. (2017) indicated that 26% of student participants who did report an incident believed that no formal action had been taken in response. Thus, it is possible that both student reporting, and institutional responses to incidents occurring during placement, can be inadequate.

Non-reporting trends among students were attributed to a range of factors in the literature. Students' lack of knowledge of reporting processes was posited as a key contributor (Birks et al., 2017b; Budden et al., 2017; Mavis et al., 2014; Minton et al., 2018). In addition, students' perception that no action would be taken in response to the report (Minton et al., 2018), and that such incidents were too insignificant to report or were to be expected as part of working in the industry, was shown across several studies (Birks et al., 2017b; Budden et al., 2017; Mavis et al., 2014). Concerns about the potential ramifications of reporting were also raised as a significant barrier to reporting, with students fearing placement failure (Birks et al., 2017a; Budden et al., 2017), and staff hostility or retaliation (Birks et al., 2017b; Budden et al., 2017; Mavis et al., 2014; Minton et al., 2018). A surprising parenthetical finding iterated across three studies was that students hesitate to report incidents compromising patient safety, and if they do, they can experience reprisal from clinical staff (Galvin et al., 2015; Clarke, 2015; Steven et al., 2014). Whilst reporting of patient safety represents a discrete and separate area of concern, these studies illustrated that many students complete their practical training within a context in which they do not feel safe to raise questions or lodge complaints. Studies clearly demonstrated that substantial, systemic barriers may inhibit avenues to reporting.

### 3.7. Barriers to competency

A prevalent theme expressed across studies was that a range of educational risks can hinder students' learning during placement. First, the literature drew attention to student concerns regarding inadequate exposure to hands-on practical learning experiences, potentially stunting professional development (Crossley and Vivekananda-Schmidt, 2015; Hamshire et al., 2013; Koch et al., 2014; Jack et al., 2018). In one study, obstruction of opportunities for student learning was deemed a

form of harassment (Minton et al., 2018). Second, the distinct educational barriers encountered by students undertaking rural placements, including financial burdens, travel time, lack of administrative support, and limited educational resources, was addressed (Spiers and Harris, 2015; Daly et al., 2013; Koch et al., 2014; Laloo et al., 2013). Third, limited coverage of crucial competencies such as sexual healthcare (Blakey and Aveyard, 2017), domestic violence (Bradbury-Jones, 2015; Bradbury-Jones and Broadhurst, 2015), and patient safety (Steven et al., 2014; Tella et al., 2015) within clinical placement was noted. Fourth, the recurring problem of placement shortages was documented (Betony and Yarwood, 2013). A fifth factor related to students' risk of placement failure or attrition, raising questions regarding students' workforce readiness (Koch et al., 2015; Davenport et al., 2017; Hamshire et al., 2013). Davenport et al. (2017) described a trend of 'failure to fail' (p. 6) marginal students among clinical supervisors in fields across healthcare, leaving students at risk of graduating without achieving sufficient clinical competencies. Finally, two studies indicated that opportunities for interprofessional education may be deficient (Gilligan et al., 2014; Greenstock et al., 2013). The literature suggests that students may not be consistently accessing high quality learning and professional development opportunities during placement, and consequently, their attainment of core clinical competencies may be at risk.

#### 4. Discussion

The 46 studies included in this review highlighted that students across a spectrum of healthcare disciplines, including nursing, medicine, paramedicine, and midwifery, contend with demonstrable risks within the clinical placement milieu. Whilst the literature showed that students can be *directly* exposed to harm (e.g. physical injury, abuse, bullying), most studies examined the risks *indirectly* posed to students during clinical placement. Indirect risks included placement shortages, limited access to supervisors, psychological distress following negative placement experiences, inadequate communication of risk-management protocol, and poor role-modelling, among others. These risks, whilst indirect in nature, were shown to precipitate significant repercussions for students. For example, educational risk associated with poor-quality learning experiences on placement may result in students failing to attain core clinical competencies and thus being unprepared for the workplace. This suggests that the risks inherent to clinical placement require urgent attention and educative action.

This review raised important concerns regarding the contribution of clinical staff and supervisors to chronic clinical placement problems. Many studies emphasised the prevalence of staff-led abuse and harassment, poor role-modelling, and negative attitudes, with steep implications for student learning. This is consistent with ample international literature demonstrating less than optimal approaches among clinical staff and mentors toward healthcare trainees (Fried et al., 2012; Hakojärvi et al., 2014; Stubbs and Soundy, 2013; Foster et al., 2004; Magnavita and Heponiemi, 2011; Curtis et al., 2007; Tee et al., 2016). Clinical environments characterised by reciprocal student-staff mistrust would hinder students' sense of safety and belonging during clinical placement, which, in turn, may attenuate student learning and gaining of critical clinical competencies (Levett-Jones and Lathlean, 2008). This was illustrated qualitatively in two papers, in which students expressed feeling devalued as learners when they were treated by clinical instructors as a 'pair of hands' (Bradbury-Jones et al., 2011; Jack et al., 2018). Results signify a need for a significant cultural shift in staff-trainee interactions.

Studies also uncovered the layers of complexity hindering student reporting of adverse events occurring during clinical placement. It appears that students are opting for peer or family support and debriefing following incidents (Shapiro et al., 2018; Sheen et al., 2012; Hoel et al., 2007; Hakojärvi et al., 2014) rather than lodging formal reports. A troubling finding was that adverse events experienced by students are

often shrugged off as a "learning experience" (Birks et al., 2017a, p.49), "part of the job" (Budden et al., 2017, p. 130), or an opportunity to "toughen up" (Scott et al., 2015, p. 185e.3) both by students and staff. This suggests a monumental lack of awareness of student rights and avenues for reporting. Results further demonstrated that even when students are aware of their reporting rights, fears of negative repercussions can prevent them from filing a report. This was echoed in Espin and Meikle's (2014) investigation of student reporting of incidents potentially harmful to patients. Each nurse trainee participant was presented with five hypothetical clinical scenarios, and asked to clarify if the scenario would be classified as an 'incident', and if and how reporting of the incident should ensue (Espin and Meikle, 2014). Students struggled to correctly classify incidents, and largely felt that reporting incidents would do more harm than good (Espin and Meikle, 2014). Dissemination and streamlining of reporting is critically needed to ensure that adverse events and near misses are managed appropriately (Wisikin et al., 2017). Foremost, top-down education is required to promote student familiarity with reporting mechanisms, and to develop a sense of faith in reporting processes.

This review underscored the view that enhanced student preparedness for clinical placement is of critical importance. Fundamental gaps in student awareness and understanding of clinical risks were evidenced. Kelton (2014) proposed that some students engaging in placement can be 'unconsciously incompetent'; that is, they may be unaware of their deficits in clinical knowledge and competencies. These students often exhibit unacceptably poor clinical practice standards (Kelton, 2014). Students lacking foundational knowledge about clinical risks may therefore be vulnerable both to experiencing an adverse event, and not reporting it. Drawing on the competency framework outlined by Kelton (2014), coaching can enable students to transition from being 'unconsciously incompetent' to 'consciously incompetent', whereby they begin to grasp their deficits in managing clinical risk. As they practice new skills with effort, they become 'consciously competent', and ultimately achieve 'unconscious competence' as these skills no longer require sustained concentration (Kelton, 2014). As urged across the literature (Seibel, 2014; Gately and Stabb, 2005; Curtis et al., 2007; Smith et al., 2016), students need to be preventatively empowered to competently and confidently manage clinical risk.

##### 4.1. Limitations

This review was exploratory in nature, seeking to capture the range of risks posed to students during clinical placement. A subsequent study limitation was that the positive elements of clinical placement were not reported. Recent empirical research indicating positive placement experiences (Lamont et al., 2015; Patterson et al., 2016; Wongtongkam and Brewster, 2017; Bjørk et al., 2014), and students' ability to cope adaptively with placement difficulties (Labrague et al., 2017), certainly exist. Literature expressing the successful aspects of clinical placement should be considered by policy makers in conjunction with the results of this review to enhance the quality of clinical placements for students across healthcare.

#### 5. Conclusion

This review enunciated the broad range of risks to students undertaking clinical placement. The literature conclusively showed that students are exposed to risk, and further, can experience adverse health events of diverse and potentially harmful nature. Unfortunately, elimination of clinical risk is all but impossible. Therefore, the responsibility to prepare students for unpredictable clinical environments, reduce the occurrence of adverse health events, and empower students to voice concerns swiftly and appropriately, falls jointly upon university faculties, clinical facilities, policy makers, and professional registration organisations. Institutional recognition of this problem and collaborative effort to address it is critically needed.

## Declarations of interest

None.

## Appendix A. Reasons for exclusion of papers from the review

Table A1 outlines the rationale for the exclusion of papers from the systematic review, in accordance with the exclusion criteria.

Table A1  
Papers dropped from systematic review.

Exclusion criteria	Authors, year of publication, title
Did not focus on students	<ol style="list-style-type: none"> <li>Cooper, K., 2014, The role of the sign-off mentor in the community setting.</li> <li>Hall, M. D., 2013, Identifying the factors contributing to Canadian physiotherapists' decisions to supervise physiotherapy students: Results from a national survey.</li> <li>Woods, J., Bowker, H., &amp; Bradley, B., 2017, Returning-to-practice using a preceptorship and Kawa Model...RCOT (Royal College of Occupational Therapist) Annual Conference 2017.</li> <li>Mathews, K., Owers, E., &amp; Palmer, M., 2015, Agreement between student dietitians' identification of refeeding syndrome risk with refeeding guidelines, electrolytes and other dietitians: A pilot study.</li> <li>Palese, A., Vianello, C., Cassone, A., Polonia, M., &amp; Bortoluzzi, G., 2014, Financial austerity measures and their effects as perceived in daily practice by Italian nurses from 2010 to 2011: A longitudinal study.</li> <li>Price, D., &amp; Whiteside, M., 2016, Implementing the 2:1 student placement model in occupational therapy: Strategies for practice.</li> <li>Sealey, R., Raymond, J., Groeller, H., Rooney, K., Crabb, M., &amp; Watt, K., 2014, Clinical exercise physiology placement supervision processes and practices: Where are we and where to next?</li> <li>Stuhlmiller, C., &amp; Tolchard, B., 2018, Population Health Outcomes of a Student-Led Free Health Clinic for an Underserved Population: A Naturalistic Study.</li> <li>Sokkar, C., &amp; McAllister, L., 2015, Diversifying student placements.</li> </ol>
Did not focus on clinical placement	<ol style="list-style-type: none"> <li>Anderson, P. et al., 2018, Snapshots of Simulation: Innovative Strategies Used by International Educators to Enhance Simulation Learning Experiences for Health Care Students.</li> <li>Aronowitz, T., Aronowitz, S., Mardin-Small, J., &amp; Kim, B., 2017, Using Objective Structured Clinical Examination (OSCE) as Education in Advanced Practice Registered Nursing Education.</li> <li>Baumann-Birkbeck, L. et al., 2017, Appraising the role of the virtual patient for therapeutics health education.</li> <li>Dias, M. S., Sussman, J. S., Durham, S., &amp; Iantosca, M. R., 2013, Perceived benefits and barriers to a career in pediatric neurosurgery: a survey of neurosurgical residents.</li> <li>Edwards, S. L., Sergio Da Silva, A. L., Rapport, F. L., McKimm, J., &amp; Williams, R., 2015, Recruitment of doctors to work in 'our hinterland': first results from the Swansea Graduate Entry Programme in Medicine.</li> <li>Ewens, B. et al., 2016, Humanising the curriculum: The role of a Virtual World.</li> <li>Fitzgerald, K., Denning, T., &amp; Vaughan, B., 2017, Simulated learning activities as part replacement of clinical placements in osteopathy: A case study.</li> <li>Flood, B., McKinstry, W., Friary, P., &amp; Purdy, S. C., 2014, Cultivating interprofessional practice in New Zealand: an inter-sectorial approach to developing interprofessional education.</li> <li>Frotjold, A., 2017, The introduction of high fidelity simulation learning into a pre-registration nursing course: The lived experience of nurse academics.</li> <li>Gamble, A. S., 2017, Simulation in undergraduate pediatric nursing curriculum: Evaluation of a complex 'ward for a day' education program.</li> <li>Kumar, K., Jones, D., Naden, K., &amp; Roberts, C., 2015, Rural and remote young people's health career decision making within a health workforce development program: A qualitative exploration.</li> <li>Lane, A., Corcoran, L., Weare, A., &amp; Perr, B., 2017, Online simulated clinical experiences in mental health nursing practice.</li> <li>Magpantay-Monroe, E. R., 2017, Integration of military and veteran health in a psychiatric mental health BSN curriculum: A mindful analysis.</li> <li>Martins, D. C., &amp; Curtin, A. J., 2014, Nursing practice and licensure across borders.</li> <li>Sinai, A., Strydom, A., &amp; Hassiotis, A., 2013, Evaluation of medical students' attitudes toward people with intellectual disabilities: A naturalistic study in one medical school.</li> <li>Stanley, M. J., &amp; Rojas, D., 2014, Teaching undergraduate nursing students about environmental health: addressing public health issues through simulation.</li> <li>Stead, A. L., &amp; Reuler, E., 2016, A Preclinical Experience for Clinical Integration in a Transgenerational Community Partnership.</li> <li>Tucker, K., Parker, S., Gillham, D., Wright, V., &amp; Cornell, J., 2015, CaseWorld: Authentic Case-Based Learning Simulating Healthcare Practice.</li> <li>Tuckett, A., &amp; Oliffe, J. L., 2016, Experiences of Australian and New Zealand new nursing and midwifery graduates looking for employment.</li> <li>Wall, O. M., &amp; Smiddy, M. P., 2017, Factors that influence hand hygiene practice among occupational therapy students.</li> <li>Crawford, T., &amp; Candlin, S., 2013, A literature review of the language needs of nursing students who have English as a second/other language and the effectiveness of English language support programmes.</li> <li>James, B., Beattie, M., Shepherd, A., Armstrong, L., &amp; Wilkinson, J., 2016, Time, fear and transformation: Student nurses' experiences of doing a practicum (quality improvement project) in practice.</li> </ol>
Did not assess risk to students	<ol style="list-style-type: none"> <li>Abedini, N.C. et al., 2015, Cross-cultural perspectives on the patient-provider relationship: a qualitative study exploring reflections from Ghanaian medical students following a clinical rotation in the United States.</li> <li>Albores, N., Sheepway, L., &amp; Delany, C., 2017, Examining beliefs and attitudes of allied health students toward mental health: Outcomes of a clinical placement.</li> <li>Annear, M. J., Lea, E., Lo, A., Tierney, L., &amp; Robinson, A., 2016, Encountering aged care: a mixed methods investigation of medical students' clinical placement experiences.</li> <li>Askew, D. A., Lyall, V. J., Ewen, S. C., Paul, D., &amp; Wheeler, M., 2017, Understanding practitioner professionalism in Aboriginal and Torres Strait Islander health: lessons from student and registrar placements at an urban Aboriginal and Torres Strait Islander primary healthcare service.</li> <li>Bouchaud, M. T., &amp; Swan, B. A., 2017, Integrating Correctional and Community Health Care: An Innovative Approach for Clinical Learning in a Baccalaureate Nursing Program.</li> <li>Browne, C. A., Fetherston, C. M., &amp; Medigovich, K., 2015, International clinical placements for Australian undergraduate nursing students: A systematic thematic synthesis of the literature.</li> <li>Casey, M. G., David, M., &amp; Eley, D., 2015, Diversity and consistency: a case study of regionalised clinical placements for medical students.</li> </ol>

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Table A1 (continued)

Exclusion criteria	Authors, year of publication, title
	8. Craswell, A., Kearney, L., & Reed, R., 2016, 'Expecting and Connecting' Group Pregnancy Care: Evaluation of a collaborative clinic.
	9. Dabney, B. W., Linton, M., & Koonmen, J., 2017, School Nurses and RN to BSN Nursing Students.
	10. Dapermont, J., & Lee, S., 2013, Partnering to educate: dedicated education units.
	11. DeMeester, D. A., 2013, The meaning of the lived experience of nursing faculty on a dedicated education unit.
	12. Fernandez, S. C., Chelliah, K. K., & Halim, L., 2015, A peek into oneself: Reflective writing among undergraduate Medical Imaging students.
	13. Frakes, K. et al., 2014, Capricornia Allied Health Partnership (CAHP): a case study of an innovative model of care addressing chronic disease through a regional student-assisted clinic.
	14. Furr, S., 2014, Nursing Students' Perceptions of Mental Health Patients and Mental Health Nursing.
	15. Gardner, J., & Emory, J., 2018, Changing students' perceptions of the homeless: A community service learning experience.
	16. Gellar, M. C., 2015, An environmental clinical experience in a RN-BS program.
	17. Gower, S., Duggan, R., Dantas, J. A. R., & Boldy, D., 2016, Motivations and Expectations of Undergraduate Nursing Students Undertaking International Clinical Placements.
	18. Hardy, S., Mushore, M., & Goddard, L., 2016, Supporting student mental health nurses in clinical placement through virtual in-practice support (VIPS): Innovation uptake and the 'VIPS' project.
	19. Hudson, J., N., Thomson, B., Weston, K. M., & Knight-Billington, P. J., 2015, When a LIC came to town: the impact of longitudinal integrated clerkships on a rural community of healthcare practice.
	20. Johnson, G., & Blinkhorn, A., 2013, The influence of a clinical rural placement programme on the work location of new dental graduates from the University of Sydney, NSW, Australia.
	21. Kelton, M. F., 2014, Clinical coaching—an innovative role to improve marginal nursing students' clinical practice.
	22. Kent, F., Courtney, J., & Thorpe, J., 2018, Interprofessional education workshops in the workplace for pre-registration learners: Aligning to National Standards.
	23. Kirby, S., Held, F. P., Jones, D., & Lyle, D., 2018, Growing health partnerships in rural and remote communities: What drives the joint efforts of primary schools and universities in maintaining service learning partnerships?
	24. Kong, W. M., & Knight, S., 2017, Bridging the education-action gap: a near-peer case-based undergraduate ethics teaching programme.
	25. Lewis, G. M., Neville, C., & Ashkanasy, N. M., 2017, Emotional intelligence and affective events in nurse education: A narrative review.
	26. Martin, C. T., 2016, The value of physical examination in mental health nursing.
	27. McCleary, E., & Cumming, P., 2015, Improving early recognition of delirium using SQiD (Single Question to identify Delirium): a hospital based quality improvement project.
	28. McKenna, L., Robinson, E., Penman, J., & Hills, D., 2017, Factors impacting on psychological wellbeing of international students in the health professions: A scoping review.
	29. McNamara, N., 2015, Preparing students for clinical placements: The student's perspective.
	30. Morphet, J. et al., 2014, Teaching teamwork: an evaluation of an interprofessional training ward placement for health care students.
	31. Nash, A. J. et al., 2017, Preparing nursing students to work with patients with alcohol or drug-related problems.
	32. Paliadelis, P. S., 2015, The development and evaluation of online stories to enhance clinical learning experiences across health professions in rural Australia.
	33. Perkins, D., 2015, Telehealth will supersede face-to-face consultations in rural Australia by 2025.
	34. Rome, C. 2013, The impact of simulation-based learning experience on critical thinking acquisition.
	35. Schaffer, M. A., Tiffany, J. M., Kantack, K., & Anderson, L. J. W., 2016, Second Life(*) Virtual Learning in Public Health Nursing.
	36. Schulz, P. M. et al., 2018, Evaluation of strategies designed to enhance student engagement and success of indigenous midwifery students in an Away-From-Base Bachelor of Midwifery Program in Australia: A qualitative research study.
	37. Shelswell, R., 2017, Education must evolve to equip students for reality.
	38. Taylor, C., Angel, L., Nyanga, L., & Dickson, C., 2017, The process and challenges of obtaining and sustaining clinical placements for nursing and allied health students.
	39. Thackrah, R. D., Thompson, S. C., & Durey, A., 2014, "Listening to the silence quietly": investigating the value of cultural immersion and remote experiential learning in preparing midwifery students for clinical practice.
	40. Thackrah, R. D., Thompson, S. C., & Durey, A., 2015, Exploring undergraduate midwifery students' readiness to deliver culturally secure care for pregnant and birthing Aboriginal women.
	41. Thackrah, R. D., Thompson, S. C., & Durey, A., 2015, Promoting women's health in remote Aboriginal settings: Midwifery students' insights for practice.
	42. Townsend, L., Gray, J., & Forber, J., 2016, New ways of seeing: Nursing students' experiences of a pilot service learning program in Australia.
	43. Vivanti, A., Haron, N., & Barnes, R., 2014, Validation of a student satisfaction survey for clinical education placements in dietetics.
	44. Warren, J. M. et al., 2016, Developing the future Indigenous health workforce: The feasibility and impact of a student-led placement programme in remote Indigenous communities.
	45. Williams, E. N., & McMeeken, J. M., 2014, Building capacity in the rural physiotherapy workforce: a pediatric training partnership.
	46. Wolfgang, R., Dutton, R., & Wakely, K., 2014, Creating positive rural experiences for occupational therapy students.
	47. Bartlett, M., Pritchard, K., Lewis, L., Hays, R. B., & McKinley, R. K., 2016, Teaching undergraduate students in rural general practice: an evaluation of a new rural campus in England.
	48. Dean, H. J. et al., 2014, Elements and enablers for interprofessional education clinical placements in diabetes teams.
	49. Didion, J., Kozy, M. A., Koffel, C., Oneil, K., 2013, Academic/clinical partnership and collaboration in quality and safety education for nurses education.
	50. Faught, D. D., Gray, D. P., DiMeglio, C., Meadows, S., & Menzies, V., 2013, Creating an integrated psychiatric-mental health nursing clinical experience.
	51. Frakes, K. et al., 2014, Experiences from an interprofessional student-assisted chronic disease clinic.
	52. Granados-Gómez, G., López Rodríguez, M. D. M., Ganados, A. C., & Márquez-Hernández, V. V., 2017, Attitudes and beliefs of nursing students toward mental disorder: The significance of direct experience with patients.
	53. Grymonpre, R. et al., 2016, Every team needs a coach: Training for interprofessional clinical placements.
	54. Harvey, T., Robinson, C., & Frohman, R., 2013, Preparing culturally and linguistically diverse nursing students for clinical practice in the health care setting.
	55. Hendrickx, L., Mennenga, H., & Johansen, L., 2013, The use of rural hospitals for clinical placements in nursing education.
	56. Johnston, K. N., Mackintosh, S., Alcock, M., Conlon-Leard, A., & Manson, S., 2016, Reconsidering inherent requirements: a contribution to the debate from the clinical placement experience of a physiotherapy student with vision impairment.
	57. Jones, P. E., & Houchins, J. C., 2017, Physician Assistant Contributions to Medical and Higher Education.
	58. Kroning, M., 2016, Strategies for Improving Nursing Students' Mental Health Clinical Rotation.

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Table A1 (continued)

Exclusion criteria	Authors, year of publication, title
	59. Kumar, S., Lensink, I. L., & Turnbull, C., 2017, Tips for using students during times of change in health care: lessons from the literature and from practice.
	60. Labrague, L. J., McEnroe-Petitte, D. M., Al Amri, M., Fronza, D. C., & Obeidat, A. A., 2017, An integrative review on coping skills in nursing students: implications for policymaking.
	61. Lait, J., 2015, Collaborative Clinical Placements: Interactions Among Students From Different Programs.
	62. Little, F., 2017, Rurally located academics for undergraduate nursing placements for students who 'go rural'.
	63. McBride, L., Fitzgerald, C., Morrison, L., & Hulcombe, J., 2015, Pre-entry student clinical placement demand: can it be met?
	64. Russian, C. J., 2015, A qualitative study to determine perceptions of neonatal and pediatric clinical education in an allied health profession.
	65. Salfi, J., Mohaupt, J., Patterson, C., & Allen, D., 2015, Reality check: Are we truly preparing our students for interprofessional collaborative practice?
	66. Wiskin, C., Barrett, M., Fruhstorfer, B., & Schmid, M. L., 2018, Recommendations for undergraduate medical electives: a UK consensus statement.
	67. Young, S., Acord, L., Schuler, S., & Hansen, J. M., 2014, Addressing the community/public health nursing shortage through a multifaceted regional approach.
Non-comparative health system	1. Aljadi, S. H., Alotaibi, N. M., Alrowayeh, H. N., & Alshatti, T. A., 2017, Benefits and Challenges of Supervising Physical Therapy Students in the State of Kuwait: A National Study.
	2. Appiagyei, A. A. et al., 2014, Informing the scale-up of Kenya's nursing workforce: a mixed methods study of factors affecting pre-service training capacity and production.
	3. Chen, C. J. et al., 2015, The prevalence and related factors of depressive symptoms among junior college nursing students: A cross-sectional study.
	4. Choi, H. et al., 2016, Clinical Education In psychiatric mental health nursing: Overcoming current challenges.
	5. Choi, M., Lee, H., & Park, J. H., 2018, Effects of using mobile device-based academic electronic medical records for clinical practicum by undergraduate nursing students: A quasi-experimental study.
	6. de Vargas, D., 2013, The impact of clinical experience with alcoholics on Brazilian nursing students' attitudes toward alcoholism and associated problems.
	7. Jacobs, A. C., MacKenzie, M. J., & Botma, Y., 2013, Learning experiences of student nurses on a healthcare train in the free state province of South Africa.
	8. Kada, S., 2015, Knowledge of Alzheimer's disease among Norwegian undergraduate health and social care students: A survey study.
	9. Kajander-Unkuri, S. et al., 2016, Congruence between graduating nursing students' self-assessments and mentors' assessments of students' nurse competence.
	10. Kaseke, F., & Mutsambi, M., 2014, Experiences of health science students during clinical placements at the University of Zimbabwe.
	11. Ketelaar, S. M., Nieuwenhuijsen, K., Frings-Dresen, M. H. W., & Sluiter, J. K., 2015, Exploring novice nurses' needs regarding their work-related health: a qualitative study.
	12. Lin, C., Lin, M., Wen, C., & Chu, S., 2016, A word-count approach to analyze linguistic patterns in the reflective writings of medical students.
	13. Mapukata, N. O., Dube, R., Couper, I., & Mlambo, M., 2017, Factors influencing choice of site for rural clinical placements by final year medical students in a South African university.
	14. Meyer, R., Van Schalkwyk, S. C., & Prakaschandra, R., 2016, The operating room as a clinical learning environment: An exploratory study.
	15. Oikarainen, A. et al., 2018, Mentors' competence in mentoring culturally and linguistically diverse nursing students during clinical placement.
	16. Olsen, N. R., Bradley, P., Lomborg, K., & Norvedt, M. W., 2013, Evidence based practice in clinical physiotherapy education: a qualitative interpretive description.
	17. Phafoli, S. H. et al., 2018, Student and preceptor perceptions of primary health care clinical placements during pre-service education: Qualitative results from a quasi-experimental study.
	18. Poreddi, V., Thimmaiah, R., Chandra, R., & BadaMath, S., 2015, Bachelor of nursing students' attitude toward people with mental illness and career choices in psychiatric nursing. An Indian perspective.
	19. Rawal, L. B., Joarder, T., Islam, S. M. S., Uddin, A., & Ahmed, S. M., 2015, Developing effective policy strategies to retain health workers in rural Bangladesh: a policy analysis.
	20. Saarikoski, M. et al., 2013, Students' experiences of cooperation with nurse teacher during their clinical placements: an empirical study in a Western European context.
	21. Simonetti, V., Comparcini, D., Flacco, M. E., Di Giovanni, P., & Cicolini, G., 2015, Nursing students' knowledge and attitude on pressure ulcer prevention evidence-based guidelines: a multicenter cross-sectional study.
	22. Suresh, P., Matthews, A., & Coyne, I., 2013, Stress and stressors in the clinical environment: a comparative study of fourth-year student nurses and newly qualified general nurses in Ireland.
	23. Van Vuuren, S., 2016, Reflections on simulated learning experiences of occupational therapy students in a clinical skills unit at an institution of higher learning.
	24. Carlson, E., & Idvall, E., 2014, Nursing students' experiences of the clinical learning environment in nursing homes: a questionnaire study using the CLES+T evaluation scale.
	25. Helgesen, A. K., Gregersen, A. G., & Roos, A. K. O., 2016, Nurse students' experiences with clinical placement in outpatient unit - a qualitative study.
	26. Houghton, C. E., Casey, D., Shaw, D., & Murphy, K., 2013, Students' experiences of implementing clinical skills in the real world of practice.
	27. McMahon, S., Cusack, T., & O'Donoghue, G., 2014, Barriers and facilitators to providing undergraduate physiotherapy clinical education in the primary care setting: a three-round Delphi study.
	28. Mikkonen, K., Elo, S., Kuivila, H., Tuomikoski, A., & Kääräinen, M., 2016, Culturally and linguistically diverse healthcare students' experiences of learning in a clinical environment: A systematic review of qualitative studies.
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