Models of pre-registration student supervision in allied health: A scoping review

K. Pope[1], L. Barclay[1], K. Dixon[1] & F. Kent[2]

Abstract

Introduction: Allied health practice placements are integral to the establishment of graduate-level competence. Ways to address placement shortages have been the focus of international scholarship for decades, with a particular emphasis on models of supervision and the ratio of students to educator. Review articles, however, conclude that there is a lack of clarity on what constitutes a model or approach and inconsistent use of terminology. The aim of this scoping review was to identify, organise and synthesise existing evidence in relation to the supervision of allied health students whilst on practice placement to provide a clearer focus for future research and to support practice placement provider decision making.

Methods: Five databases were searched for peer-reviewed articles published from 2000 onwards. Data were extracted and analysed according to approaches to supervision and student and/or educator outcomes for different models used. Each outcome was aligned to modified Kirkpatrick levels of evaluation.

Results: 44 articles were reviewed. The terms *models* and *approaches* were poorly defined and often used interchangeably. Studies varied in the methods employed and were typically of low to moderate methodological quality with a dominance of Kirkpatrick Level 2a outcomes reported.

***Conclusion*:** This review identified some positive qualitative outcomes for both students and educators for shared supervision models despite the allegiance allied health holds to the single student model. Further rigorous investigation into the use of shared supervision in allied health through collecting data on indicators beyond perception, such as time use, cost, productivity and patient outcomes, is warranted.

Keywords: practice education; student supervision; allied health; Kirkpatrick levels of evaluation; scoping review

[1] Department of Occupational Therapy, Monash University, Melbourne, Victoria, Australia
[2] Education Portfolio, Faculty of Medicine, Nursing and Health Sciences, Monash University, Melbourne, Victoria, Australia

Correspondence: Kirsty Pope kirsty.pope@monash.edu

Introduction

Allied health training courses prepare students for work, with practice placements integral to the establishment of graduate-level competence (Rodger et al., 2008). Practice placements provide students with the opportunity to "integrate knowledge, professional reasoning and professional behaviour within practice, and to develop knowledge, skills and attitudes to the level of competence required" under supervision (WFOT, 2016, p. 48). Qualified health professionals maintain overall responsibility for student learning, assessment and performance development (DHHS, 2023). Although supervision differs across health professions and settings (e.g., hospital, community, schools), lessons may be learnt about supervision from all allied health settings. The terms supervisor and educator are used interchangeably within the literature. For this research, the term educator was selected and refers to "the professional/s who supervise and manage student learning during practice placements" (Rodger et al., 2008, p. 53).

There is a shortage of practice placements for allied health students in Australia due to disproportional growth in student enrolments without a corresponding increase in practice educators (Bowles et al., 2014). Government policy changes in higher education set in motion increases in university places in Australia. In 2008, projected shortages in the national healthcare workforce led the Australian government to increase the number of Commonwealth-supported undergraduate university places in medicine, nursing and allied health courses (Bradley et al., 2008). In 2012, student cohort sizes rose again with the removal of caps on student numbers for most health professional courses (DHHS, 2016). This increase is reflected in figures published by The Australian Health Practitioner Regulation Agency (AHPRA) detailing a 43% increase in registered health students for the period from 2012 to 2019. The registered allied health workforce increased in the same period by only 28% (AHPRA, 2012–2019), creating an urgent need for an increase in student supervision.

Practice placement capacity has been the focus of international scholarship for decades. In particular, studies have explored ways to address placement shortages in the context of increasing student numbers, often focusing on models of supervision and the ratio of students to educator (Jung et al., 1994). For example, in Canada in the 1980s, a shortage of practice placements for occupational therapy students led to the pilot of assigning two students to one educator (Tiberius & Gaiptman, 1985), and investigations of other supervision models have followed (Boniface et al., 2012; Miller et al., 2006; Rindflesch et al., 2009). A review of the international occupational therapy literature from 1990–2009 highlighted ongoing shortages of practice placements (Roberts et al., 2015). Placement shortages for speech-language pathology students internationally have similarly been reported (Bourne et al., 2019).

Practice placement research has been both low in quality and limited in scope. Many studies have been descriptive, with small sample sizes, containing limited information

on recruitment methods or inclusion/exclusion criteria and predominantly limited to physiotherapy (Briffa & Porter, 2013; Lekkas et al., 2007; Sevenhuysen et al., 2017). Researchers have frequently cited placement capacity as the context for research, but publications lacked detail regarding the models of supervision and their impact, limiting the utility of the research (Lekkas et al., 2007).

Eight review articles have explored supervision of allied health students on practice placements—four focused on peer learning (Markowski et al., 2021; Olaussen et al., 2016; Secomb, 2008; Sevenhuysen et al., 2017); two were systematic reviews of varying models of supervision (Briffa & Porter, 2013; Lekkas et al., 2007); one was a review of the 2:1 model of supervision in physiotherapy (Baldry Currens, 2003); and one was a systematic mapping of fieldwork education in occupational therapy (Roberts et al., 2015). All review articles conclude there are a variety of models and approaches, a lack of clarity on what constitutes a model or approach and inconsistent use of terminology across the many allied health professions. The aim of this scoping review was to identify, organise and synthesise existing evidence in relation to the supervision of allied health students whilst on practice placement. In doing so, we hope to provide a clearer focus for future research and support practice placement provider decision making in relation to models and approaches for student supervision.

Methods

A scoping review was undertaken (Arksey & O'Malley, 2005) as this provides a useful approach for the mapping of existing literature, summarising and disseminating research findings and clarifying complex concepts (Levac et al., 2010). The Arksey and O'Malley (2005) six stage process, with proposed revisions by Levac et al. (2010) and Peters et al. (2020) was followed with reporting based on scoping review guidelines (Tricco et al., 2018).

Identifying the research question

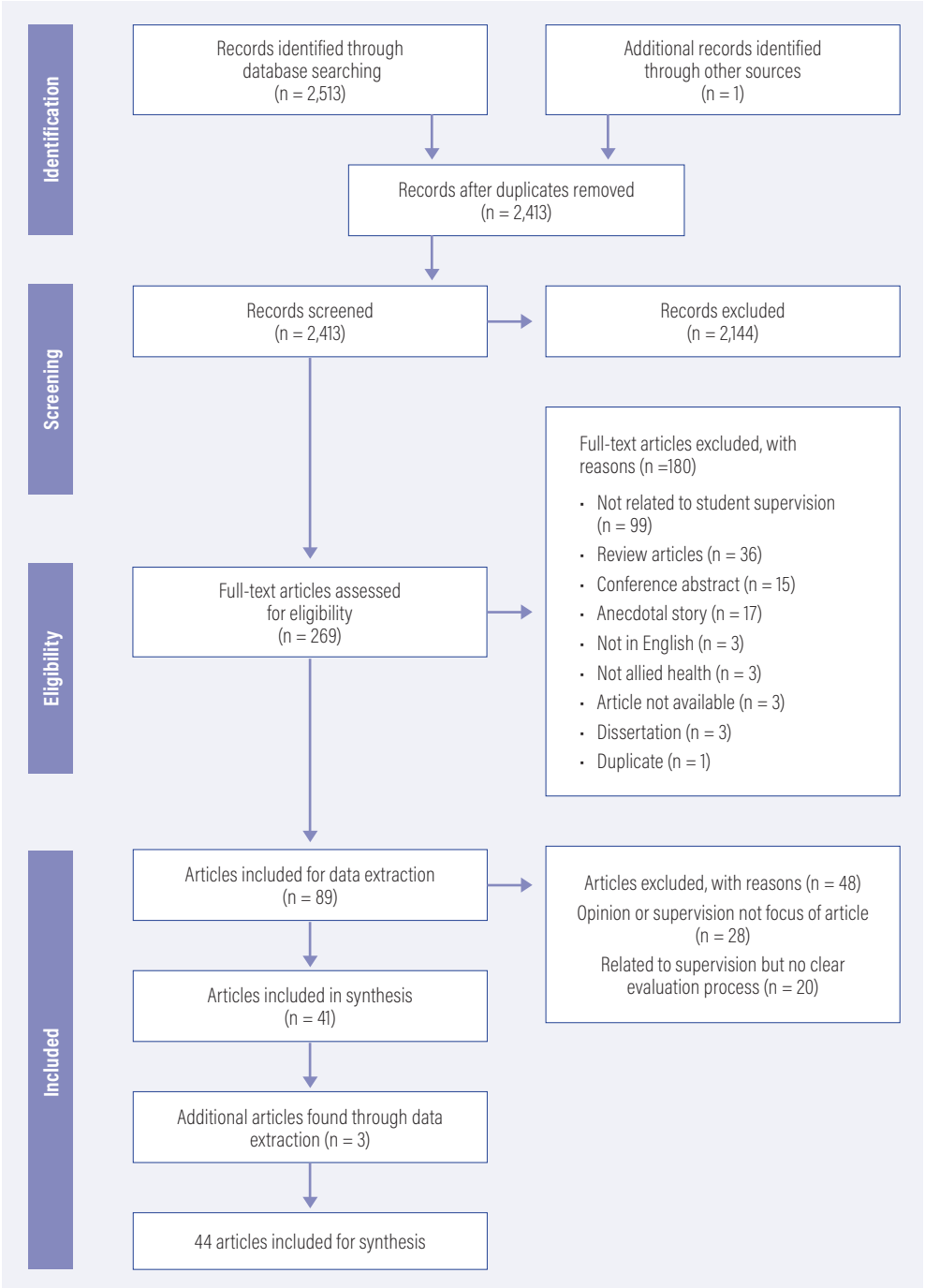
The research question was: What is known from the published literature about the different supervision models and approaches used with allied health students on practice placement? We specifically sought to: a) clarify and define supervision models and approaches used with allied health students on practice placement, b) identify and summarise reported outcomes from the use of student supervision models and approaches and c) compare the student supervision models.

Identifying relevant studies

The search strategy followed three steps identified by Peters et al. (2020). Step 1 involved a limited search of Ovid MEDLINE and CINAHL to identify articles, followed by analysis of text words used in titles, abstracts and index terms. Step 2 was the formal search of CINAHL PLUS, EMBASE, OVID MEDLINE, PSYCH INFO and SCOPUS (See Appendix A). Step 3 involved seeking additional literature via a manual search

Figure 1

PRISMA 2009 Flow Diagram



of the reference lists. The initial search was completed in April 2020 and updated in March 2022. The search was limited to literature published post-2000 to align with the increasing cohort sizes and subsequent placement challenges. Inclusion and exclusion criteria are detailed in Appendix B. Allied health consists of a diverse range of professions with no universally regarded classification (Gibson et al., 2019). For the purpose of this review, 25 allied health professions identified in the Victorian Allied Health Clinical Supervision Framework (DHHS, 2019) were included.

Study selection

Two thousand five hundred and thirteen articles were identified for possible inclusion and imported to Covidence review software (© Covidence 2021). After duplicates were removed, 2,413 articles were screened by title and abstract by two researchers, KP and KD (Figure 1). Discrepancies were flagged and discussed by KP and KD against the inclusion criteria and ability to contribute to the research questions until reaching consensus. Full-text review of 269 articles was then conducted by two researchers—KP reviewed all, whilst FK, KD and LB reviewed a third each. Again, discrepancies were discussed by the team until consensus was achieved. The two most common reasons for the exclusion of 180 articles at this stage were papers not being related to student supervision or review articles. See Figure 1 for full list of reasons.

Charting the data

Information was extracted from 89 articles using a data extraction template and included: aims/purpose of the article, study type, profession of interest, participants, setting of intervention, model of supervision described in the article and outcome measure or tool. Approaches to supervision were categorised as administrative, educational or supportive (Kadushin & Harkness, 2002). Outcomes were categorised as student, educator, both student and educator, organisation, patients, other. To create a common metric for data synthesis, each outcome was aligned to a Kirkpatrick (2016) level of evaluation, which provides an indication of the type of difference an intervention makes and to whom. An explanation of how each of the four levels aligned to student supervision models or approaches to supervision is detailed within Table 1. The data extraction tool was piloted on five disparate articles then discussed and modified by the research team before KP extracted all data.

Table 1

Kirkpatrick Levels Applied to Scoping Review

Level 1: Reaction. Student or supervisor views on supervision, including if participants see the model or approach as favourable, engaging and relevant
Level 2a: Modification of student or supervisor perceptions and attitudes to the value of a model or approach to supervision
Level 2b: Learning. Acquisition of knowledge, skill, confidence or commitment based on student and/or supervisor participation in a model or approach to supervision
Level 3: Behaviour. Change in professional practice for student and/or supervisor based on their participation in a model or approach to supervision
Level 4a: Change in organisational practice/service delivery due to implementation of model or approach to supervision
Level 4b: Benefits to patients/clients as a result of the model or approach to supervision

(adapted from Freeth et al., 2008)

Collating, summarising and reporting results

Extracted data from the 89 full-text articles were categorised into three levels of relevance based on ability to contribute to the research questions. Only 41 of these articles included a clear description and/or implementation of a supervision model or approach and were ultimately included in the synthesis. Manual review of the references yielded three additional articles. See Table 2 for further details on the 44 selected articles.

Consultation

A variety of terms were used within the literature to describe models of supervision, with the majority of the terms reflecting student–educator ratio, e.g., 1:1, 2:1, 3:1. To address this issue, a draft collation of all identified terms was shared with external stakeholders from a range of allied health professions. The professions that provided feedback were audiology, dietetics, exercise physiology, medical imaging and radiation sciences, occupational therapy, osteopathy, physiotherapy, podiatry and social work. The external stakeholders endorsed the definitions but also highlighted the need for the term "practice educator" to be defined. This was subsequently added to the final definitions table (Table 3).

Table 2

Characteristics of Papers Included for Review

Author (Year)	Country of Origin	Profession/s of Interest	Aims/Purpose	Supervision Model/ Approach	Study Type (Method/s)
Aljadi et al. (2017)	Kuwait	Physiotherapy	To survey clinical supervisors' perceptions about the benefits and challenges associated with supervising physical therapy	1:1, 2:1, group	Retrospective (quantitative survey)
Alpine et al. (2019)	Ireland	Physiotherapy	To investigate student and practice educator evaluations of practice placements using a structured 2 to 1 supervision and implementation model	Structured 2:1	Prospective (cross-sectional mixed methods survey)
Barrett et al. (2021)	Ireland	Physiotherapy	To establish the supervision models used during physiotherapy practice placements from one university and to determine the student and practice educators' evaluations of the quality of the placements	1:1, 2:1, 1:2, 1:3	Prospective (cross-sectional mixed methods survey)
Bartholomai & Fitzgerald (2007)	Australia	Occupational therapy	To describe the implementation of a collaborative model of fieldwork education in a regional hospital occupational therapy department	3:1	Prospective (descriptive program evaluation)
Bhagwat et al. (2018)	Australia	Speech and language therapy	To compare clinical educator and student time use between paired and placements	Paired and 1:1	Prospective (mixed-methods cohort study)
Bourne et al. (2019)	Australia	Speech-language pathology	To examine the effect of speech-language pathology students on clinician time use and activity	1:1, 2:1, 3:1	Prospective (quantitative cohort study)
Claessen (2004)	Canada	Speech-language pathology	To evaluate the implementation of a 2:1 model	2:1 model incorporating PAL	Prospective (descriptive qualitative program evaluation)
Cleak et al. (2016)	Northern Ireland	Social work	To explore social work students' supervision and learning opportunities on placement	1:1, long-arm with on-site SW facilitator, long-arm with non-SW onsite facilitator	Retrospective (cross-sectional quantitative survey)
Cleak et al. (2022)	Australia	Social work	To report on a subset of a larger Australian study of social work students' experience of supervisory practices on placement	On-site and off-site supervision	Retrospective (mixed methods survey)

Author (Year)	Country of Origin	Profession/s of Interest	Aims/Purpose	Supervision Model/ Approach	Study Type (Method/s)
Copley et al. (2012)	Australia	Occupational therapy	To trial the multi-mentoring model across a number of different practice settings	Multi-mentoring model	Prospective (focus groups)
Coulton et al. (2005)	Australia	Social work	To evaluate the use of co-supervision	Co-supervision	Retrospective (qualitative survey, focus group & interviews)
Covington et al. (2017)	USA	Physical therapy	To describe the development of an integrated clinical education collaborative model	Teams of 3–4 students	Prospective (quantitative program evaluation)
Dancza et al. (2013)	England and Ireland	Occupational therapy	To build a comprehensive picture of role-emerging placements	Off-site supervision	Prospective (qualitative semi-structured interviews)
Dancza et al. (2016)	UK	Occupational therapy	To describe the development of a clinical placement workbook	Paired off-site supervision	Prospective (action research)
Dawes & Lambert (2010)	UK	Occupational therapy, physiotherapy and speech and language therapy	To explore the lived experience of practice educators from 3 professions who had chosen to adopt the 2:1 model	2:1	Retrospective (qualitative semi-structured interviews)
Egan et al. (2021)	Australia	Social work	To explore the experience of stakeholders engaged with the off-site supervision model	Off-site supervision	Prospective (participatory action research)
Farrow et al. (2000)	Canada	Occupational therapy	To compare the group model with 1:1 model of supervision	Group model, 2 or more students supervised by 3 or more supervisors	Prospective (quasi-experimental mixed methods)
Fieldhouse et al. (2009)	UK	Occupational therapy	To explore the nature of the learning on a role-emerging placement	Off-site supervision	Prospective (qualitative observation & focus group)
Gallagher & Cahill (2008)	Ireland	Occupational therapy	To evaluate the advantages and challenges of using the 2:1 model in practice	2:1	Retrospective (qualitative semi-structured interviews)
Golos & Tekuzener (2019)	Israel	Occupational therapy	To explore occupational therapy students' perceptions, expectations and satisfaction levels in relation to their practice placements prior to and after completion of placements	Role emerging vs role established	Prospective (quantitative survey)

ISSN 1442-1100

Author (Year)	Country of Origin	Profession/s of Interest	Aims/Purpose	Supervision Model/ Approach	Study Type (Method/s)
Gordon et al. (2013)	USA	Speech-language pathology	To explore supervisor and supervisee perceptions of clinical supervision that used an adult experiential learning model	1:1	Prospective (qualitative semi-structured interviews & written quiz)
Kassam et al. (2013)	Canada	Pharmacy	To compare role-emergent and role-established pharmacy clinical placement experiences in long-term care facilities	Role-emergent compared with role-established	Prospective (mixed methods)
Kell & Owen (2009)	UK	Physiotherapy	To explore the possible influence of the placement-learning environment on students' approaches to learning	Comparison of multiple models	Prospective (mixed methods case study design)
Martin et al. (2004)	UK	Occupational therapy	To determine the impact of different models of practice education (1:1, 2:1 and 3:1) on the quality of the education for students and on the quality of the experience for educators	Comparison of multiple models	Prospective (qualitative interviews)
McPake (2019)	UK	Radiography	To explore the experiences of undergraduate (UG) radiotherapy students and their supervising practice educators within UK practice placement models	Paired vs single student models	Retrospective (qualitative survey & focus group)
Miller et al. (2006)	Canada	Physiotherapy	To describe a collaborative learning internship of 4 students assigned to 2 clinical instructors (4:2 ratio)	4:2 ratio	Prospective (descriptive qualitative field study)
Moore et al. (2003)	UK	Physiotherapy	To determine how different models of clinical education (1:1, 2:1 and 3:1) impact on the quality of education for students and the quality of experience for educators	1:1, 2:1, 3:1	Prospective (qualitative interviews & focus group)
Morris & Stew (2007)	UK	Physiotherapy	To explore how 2:1 models of collaborative learning in a practice setting promote peer reflection	2:1	Prospective (qualitative semi-structured interviews & focus group)
Nadasan & Puckree (2001)	South Africa	Physiotherapy	To determine strategies used to cope with the 12:1 student:clinical instructor ratio to ensure optimal clinical education	12:1 model	Retrospective (mixed methods case study design)
Nelson et al. (2010)	Australia	Occupational therapy	To describe and evaluate the multiple mentoring model across a number of different clinical practice settings	Multiple mentoring model	Prospective (focus groups & review of written documents)

Author (Year)	Country of Origin	Profession/s of Interest	Aims/Purpose	Supervision Model/ Approach	Study Type (Method/s)
O'Connor et al. (2012)	Ireland	Occupational therapy and physiotherapy	To compare the experiences and perspectives of clinical educators and students involved in 1:1 and 2:1 models of clinical education across occupational therapy and physiotherapy programs	1:1 and 2:1	Retrospective (qualitative semi-structured interviews)
Pabian et al. (2017)	USA	Physical therapist/ physiotherapist	To examine the effect of clinical education on the productivity in clinical facilities across disciplines and the continuum of care	2:1	Retrospective (quantitative, longitudinal productivity review)
Panos (2005)	USA	Social work	To describe the triad model of videoconferencing supervision and report the responses of internationally placed social work field practicum students, agencies and university supervisors	Video conferencing supervision	Prospective (mixed methods experimental exploratory study)
Patterson et al. (2017)	Australia	Occupational therapy	To investigate student experiences and perceptions of the student-led groups program model of professional practice education in an inpatient brain injury rehabilitation unit	2:1 and 3:1 plus full-time clinical education support officer	Prospective (qualitative semi-structured interviews)
Price et al. (2016)	Australia	Occupational therapy	To examine supervisor experiences in a trial of a 2:1 supervision model	2:1	Prospective (focus groups)
Quigley et al. (2020)	Ireland	Speech and language therapy	To explore the perspectives of student SLTs in the Republic of Ireland in relation to factors that would best support their learning and competency development on placement	Approaches to supervision	Retrospective (qualitative survey)
Reese et al. (2009)	USA	Counselling psychology	To compare the experiences of students supervised via videoconferencing with those supervised face-to-face	Rotation of in-person and tele-supervision in groups	Prospective (mixed methods)
Reidlinger et al. (2017)	UK	Dietetics	To evaluate a PAL and small-group teaching model	1:1 vs small group teaching with PAL	Prospective (mixed methods)
Roberts et al. (2009b)	Australia	Dietetics	To pilot and evaluate a new model of clinical dietetics education to address the sustainability of dietetic placements in the clinical setting	2:1	Prospective (mixed methods)

ISSN 1442-1100

Author (Year)	Country of Origin	Profession/s of Interest	Aims/Purpose	Supervision Model/ Approach	Study Type (Method/s)
Sevenhuysen et al. (2014)	Australia	Physiotherapy	To evaluate the efficacy and acceptability of a peer-assisted learning model compared with a traditional model for paired students in physiotherapy clinical education	PAL vs traditional 2:1	Prospective (RCT)
Sevenhuysen et al. (2015)	Australia	Physiotherapy	To explore the experiences of students and clinical educators in a paired student placement model incorporating facilitated peer-assisted learning activities, compared to a traditional paired teaching approach	PAL compared with paired teaching approach	Prospective (focus groups)
Snodgrass et al. (2016)	Australia	Occupational therapy, physiotherapy, speech pathology	To determine the feasibility of providing electronic student feedback during clinical placements	1:1	Prospective (quantitative survey)
Vassos et al. (2018)	Australia	Social work	To provide insights into the students and supervisors' experience of supervisory relationships in the context of a team-based rotation approach to practice teaching and learning	Team-based rotation model with students in pairs	Prospective (mixed methods)
Zeira & Schiff (2010)	Israel	Social work	To compare students' evaluations of their experiences of fieldwork between group and individual supervision	Group supervision 4/5:1	Prospective (quasi-experimental quantitative survey design)

ISSN 1442-1100

Table 3

Models of Supervision Definitions

Model of Supervision	Proposed Definition	Synonyms	Verbatim Descriptions Within the Literature
1:1 supervision model	One educator* supervises one student	1:1 model, singleton placement, single student model, apprenticeship model, supervisor–supervisee dyad	"1 supervisor: 1 student" (Aljadi et al., 2017; Dawes & Lambert, 2010; Gallagher & Cahill, 2008; O'Connor et al., 2012; Price & Whiteside, 2016; Reidlinger et al., 2017)
			"Single student on a placement with one or more clinical educators" (Bhagwat et al., 2018)
			"A singleton or an on-site practice teacher, who provided both professional social work supervision and task supervision" (Cleak et al., 2016)
			"An apprenticeship model, where the student is expected to learn core professional skills as well as technical skills from his or her supervisor, who is the practising (expert) occupational therapist (Higgs and Titchen 2001, Bonello 2001)" (Fieldhouse & Fedden, 2009)
			"One student is educated by a senior physiotherapist, who adopts the role of practice educator" (Moore et al., 2003)
			"Students work largely as individuals; they might spend all or part of the day with the supervisor. Students learn fairly didactically" (Roberts et al., 2009b)
2:1 supervision model	One educator supervises two students on placement at the same time	2:1, paired model, collaborative model	"1 supervisor: 2 students concurrently" (Aljadi et al., 2017; Alpine et al., 2019; Claessen, 2004; Dawes & Lambert, 2010; Miller et al., 2006; O'Connor et al., 2012; Price & Whiteside, 2016)
			"Paired placements (two students on a placement together sharing one or more clinical educators)" (Bhagwat et al., 2018)
			"A 2:1 supervision model exists along a continuum. This ranges from an "Individualistic Learning" (IL) model, where two students may work under one CE, but totally independently, each carrying their own caseload, to a "Peer Assisted Learning" (PAL) model, where collaboration of varying degrees occurs between two students (see Ladyshewsky, 2000a)" (Claessen, 2004)
			"2:1 or collaborative model where one practice educator takes responsibility for the education of two or more students" (Morris & Stew, 2007)
			"A collaborative model of clinical education involving 2 students with 1 clinical instructor (2:1)" (Pabian et al., 2017)
			"Two students supervised by one clinical educator"(Sevenhuysen et al., 2014)

Model of Supervision	Proposed Definition	Synonyms	Verbatim Descriptions Within the Literature
≥ 3:1 supervision model	One educator supervises three or more students on placement at the same time	Collaborative model, collaborative learning model, 3+:1, STEPS multiple placement model, student-led group model, multiple model, group teaching and supervision	"1 supervisor: student group" (Aljadi et al., 2017) "One practice educator (PE) supervising two or more students. … Two or more students collectively take responsibility for most of their PEs caseload as the placement progresses" (Copley & Nelson, 2012) "Teams of 3 or 4 students return to the same clinical practice setting for first 3 STEPs courses during the 1 academic year. This allows the student team to form a strong relationship with a primary CI throughout an entire year. … The team remains intact through all 6 academic semesters. However, after the first year in the program, teams are reassigned to a different clinic location in a different practice setting for the final 3 STEPs courses" (Covington et al., 2017) "'Two or more students are assigned to one CI [clinical instructor]' according to DeClute and Ladyshewsky (1993, p. 684)" (Martin et al., 2004) "Multiple or collaborative model. … In this model of practice education a senior practitioner normally takes responsibility for the education of two or more students at the same time" (Moore et al., 2003) "In pairs or trios with one formal practice educator, and students were responsible for the facilitation of the existing group therapy program" (Patterson et al., 2017) "3:1 (or more) students to supervisor ratio. The student team generally alternate roles in performing tasks, for example, doer, resource person and evaluator. Teams meet with facilitating practitioners who are also responsible for some observation and reviewing of care plan" (Roberts et al., 2009a) "Students divided into four groups of 5 students. … Each of the four groups … was supervised by a field instructor. … Instead of the weekly 90 minute individual supervision, the group supervision included two weekly meetings of 90 min of small group (4–5 members) supervision. One unit focuses on discussing students' work with clients and the other meeting was dedicated to working on developing the students' professional identity" (Zeira & Schiff, 2010)

Model of Supervision	Proposed Definition	Synonyms	Verbatim Descriptions Within the Literature
Off-site supervisor model	Off-site educator supervises students on placement	Long-arm model, off-site supervisor, role emerging, role emergent	"A long-arm practice teacher, who provided professional social work supervision, and an on-site facilitator who was not social work qualified (Long-arm OSF unqualified)" (Cleak et al., 2016) "Within these [role-emerging] settings students are provided with frequent (e.g., daily) on-site supervision by a professional who is not an occupational therapist, and less frequent (e.g., weekly) supervision by an occupational therapist who is either university or practice based (Overton, Clark & Thomas, 2009)" (Dancza et al., 2013) "A role-emerging placement (REP) may be set up by a higher education institution to capitalise on a potentially rich learning experience in a setting that does not have an existing occupational therapy service (College of Occupational Therapists [COT] 2006)" (Fieldhouse & Fedden, 2009) "Role-emergent [placements] at sites which had traditionally not served as placement locations for pharmacy students" (Kassam et al., 2013) "Involves placement in settings without a qualified practitioner. Day-to-day supervision is by an identified member of staff (preferably one who is trained as an educator) and periodic supervision by a visiting qualified professional, academic or practitioner" (Roberts et al., 2009a)
Shared supervision model	Two or more educators share student supervision on placement	Co-supervision model, shared supervision, multi-mentoring model, group model of supervision, collaborative learning model, team-based rotation model, triad model, long-arm model, supervisor–preceptor collaboration	"Supervision provided by two or more workers who work equally and collaboratively to encourage the strengths and capabilities of the supervisee." (Coulton & Krimmer, 2005) "Two or more supervisors to one student, largely based on supervision cycling" (Roberts et al., 2009a) "Involves a group of students (2 or more) being jointly supervised by a group of therapists (3 or more) who work in related areas of practice" (Farrow et al., 2000) "Four students assigned to 2 CIs (4:2 ratio)" (Miller et al., 2006) "A team of 2 or more students supervised by a team of two or more supervisors" (Nelson et al., 2010) "A team of PEs supervising a team of students. … Although there may be one overall coordinating supervisor, all PEs share responsibility for student education. Students have individual caseloads, but may also share some aspects of each other's caseloads and are encouraged to share knowledge and to problem solve together" (Copley & Nelson, 2012) "A long-arm practice teacher, who provided professional social work supervision, and a qualified social worker, who was the on-site facilitator (OSF) and provided day-to-day caseload supervision (Long-arm OSF qualified)" (Cleak et al., 2016) "1:1 student to onsite preceptor ratio, but 8–10:1 students to academic supervisor ratio" (Roberts et al., 2009a)

* The term "educator" describes the professional/s who supervise and manage students' learning during practice placements (Rodger et al., 2008a)

Results

For each model of supervision, reported outcomes are collated and presented in the following categories: student, educator, organisation and patients. An ascending order of Kirkpatrick levels of evidence is presented with advantages and disadvantages.

Models of supervision

1:1 Model of supervision

Students

Level 2a: Students described less comparison and competition with other students when supervised alone by a single educator (Martin et al., 2004; McPake, 2019). Increases in the following areas were reported: patient contact (McPake, 2019), opportunity to demonstrate independence and autonomy (O'Connor et al., 2012), opportunity for educator assessment of individual strengths and weaknesses (Martin et al., 2004) and perception of success (Kell & Owen, 2009; McPake, 2019). Students described greater depth of learning in the closer relationship (Barrett et al., 2021; Kell & Owen, 2009), and educators reported improvement in students' ability to receive feedback (Farrow et al., 2000). Increased learning opportunities from working directly with one educator were also reported, but this varied depending on educator workload (Martin et al., 2004). In some cases, there were reduced learning opportunities due to the absence of a peer (Martin et al., 2004; McPake, 2019; O'Connor et al., 2012). Students both valued the 1:1 relationship (McPake, 2019) and critiqued the intensity (Farrow et al., 2000; Martin et al., 2004; Nelson et al., 2010; O'Connor et al., 2012). Whilst greater student integration into the team was described (Martin et al., 2004), students reported missing the social and emotional support offered by placements with multiple students (Barrett et al., 2021; Martin et al., 2004; McPake, 2019; O'Connor et al., 2012).

Educators

Level 1: Educators positively regarded the 1:1 model (Martin et al., 2004).

Level 2a: Single student placements were easy to organise (O'Connor et al., 2012), allowed more time to assess student level (Martin et al., 2004; Price & Whiteside, 2016; Roberts et al., 2009b), provided opportunities to provide timely feedback (Barrett et al., 2021; Bhagwat et al., 2018) and enabled student-centred placements (Miller et al., 2006) and an opportunity to build a positive educator–supervisee relationship (Barrett et al., 2021; Farrow et al., 2000; Martin et al., 2004). Satisfaction was higher in 1:1 than group models for quality of contact with students, opportunities to observe students, relationships with students and responsibility for evaluation (Barrett et al., 2021; Farrow et al., 2000). Negative considerations included student dependency (Barrett et al., 2021; Martin et al., 2004), which could be draining (Copley & Nelson, 2012) and required educators to undertake more direct supervision (Reidlinger et al., 2017).

2:1 Model of supervision

Students

Level 1: Students described no significant differences in placement satisfaction between the 2:1 and 1:1 model (Bhagwat et al., 2018).

Level 2a: Advantages of this model included an increase in collaborative activities and learning opportunities (Alpine et al., 2019; Barrett et al., 2021; Martin et al., 2004; O'Connor et al., 2012), skill development in clinical reasoning, communication and autonomy (Gallagher & Cahill, 2008), reflective practice (Dancza et al., 2013; Morris & Stew, 2007), student initiative (Price & Whiteside, 2016), emotional or peer support (Alpine et al., 2019; Dancza et al., 2013; Dawes & Lambert, 2010; Gallagher & Cahill, 2008; Martin et al., 2004; O'Connor et al., 2012; Price & Whiteside, 2016) and ability to evaluate performance and provide feedback to a peer (Alpine et al., 2019).

A disadvantage of the 2:1 model was peers being perceived as a competitive threat (Alpine et al., 2019; Barrett et al., 2021; Gallagher & Cahill, 2008; O'Connor et al., 2012; Price & Whiteside, 2016), impacting on self-confidence (O'Connor et al., 2012). Some educators described students finding different peer learning methods challenging (Gallagher & Cahill, 2008). Peer relationships are related to student perceived success or failure on placement (O'Connor et al., 2012) and a compromised ability to demonstrate knowledge and skills to an educator (O'Connor et al., 2012). Educators reported a risk of sharing poor practice due to students teaching each other (Dawes & Lambert, 2010) and reduced depth of learning (Kell & Owen, 2009). Students reported less access to patients (O'Connor et al., 2012), fewer opportunities to practise clinical skills (Price & Whiteside, 2016), negatively affected supervisory relationship due to unequal one-to-one educator time (Alpine et al., 2019; Farrow et al., 2000) and reduced opportunity for educators to assess them on an individual level (Barrett et al., 2021; O'Connor et al., 2012).

Level 3: There was no significant difference in median number of daily occasions of service between student-paired and single cohorts, with paired students spending less time at "work" than single students (Bhagwat et al., 2018).

Educators

Level 2a: Some educators reported being satisfied with the workload balance of the 2:1 model (Sevenhuysen et al., 2014), with reduced teaching time required (Alpine et al., 2019; Gallagher & Cahill, 2008; Price & Whiteside, 2016; Roberts et al., 2009b). However, some described an increase in administrative workload (Dawes & Lambert, 2010; Gallagher & Cahill, 2008), especially if differences in students' capacities led to educators continuing to provide 1:1 supervision (Barrett et al., 2021; Dawes & Lambert, 2010; Gallagher & Cahill, 2008; Price & Whiteside, 2016; Roberts et al., 2009b). Unhealthy competition between students could be tiring

(Roberts et al., 2009b) and difficult to manage (Alpine et al., 2019), as were the constant questions and competing demands of students (Dawes & Lambert, 2010). Educators reported reduced satisfaction in their ability to provide timely feedback compared with educators with one student (Bhagwat et al., 2018) and increased time giving feedback or assessing students (Alpine et al., 2019; Gallagher & Cahill, 2008; Price & Whiteside, 2016).

Paired students provided an opportunity for comparison by the educator (Gallagher & Cahill, 2008) but also risked the educator not providing individual assessment (Alpine et al., 2019; Gallagher & Cahill, 2008; Price & Whiteside, 2016; Roberts et al., 2009b) or maintaining student privacy (Martin et al., 2004). Educators felt uncomfortable relying too much on peer feedback (Roberts et al., 2009b), had difficulties finding sufficient numbers of patients (O'Connor et al., 2012; Roberts et al., 2009b) and described reduced student "hands-on" experience (Dawes & Lambert, 2010).

Level 2b: Increased discussion and questioning by students prompted educators to reflect on their own clinical practice and encouraged them to maintain high standards of knowledge and skills (Martin et al., 2004).

Level 3: Educator time use was not statistically significantly different between paired or students in a 1:1 model (Bhagwat et al., 2018; Bourne et al., 2019; Roberts et al., 2009b).

Organisation

Level 2a: Students provided additional support for patients requiring maximum assistance (Alpine et al., 2019) and created additional discussion and sharing of fresh ideas within the department (Dawes & Lambert, 2010). Two articles reported this model increased the number of clients seen (Alpine et al., 2019; Copley & Nelson, 2012), while another reported no effect on patient throughput (Dawes & Lambert, 2010). There was a perceived need for a whole team approach to make this model of supervision work and for patient care not to be compromised (Dawes & Lambert, 2010).

Level 4a: A longitudinal retrospective review of productivity over a 3-year timeframe reported that "moving from one to two students equated to reaching over 125% of the productivity standard" (Pabian et al., 2017, p. 15).

Patients

Level 2a: Some educators observed patients enjoying student attention and being happy to support students' learning, whilst others perceived extra students as a burden for patients (Price & Whiteside, 2016).

>3:1 Model of supervision

Students

Level 1: Research by Patterson et al. (2017) found that students enjoyed the overall experience of placement with other students but would have preferred the 1:1 supervision model towards the end of their placement.

Level 2a: An advantage of peer presence was social and emotional support (Covington et al., 2017; Martin et al., 2004; McPake, 2019; Moore et al., 2003; Patterson et al., 2017), encouragement to take more initiative (Patterson et al., 2017) and deeper learning (Covington et al., 2017; McPake, 2019). Also noted were opportunities to develop new skills, such as autonomy (Bartholomai & Fitzgerald, 2007; Covington et al., 2017; Patterson et al., 2017), clinical reasoning (Patterson et al., 2017), communication/teamwork (Covington et al., 2017; McPake, 2019), reflective practice (McPake, 2019) and problem-solving skills (Covington et al., 2017; Patterson et al., 2017).

Disadvantages of the >3:1 model included less time for educators to facilitate learning (Martin et al., 2004) and adoption of superficial learning approaches for students on higher student ratio placements (Kell & Owen, 2009). Students reported perceiving peers as competition (Martin et al., 2004) and were concerned about educator ability to assess them accurately (Martin et al., 2004). Student "fear of failure" was significantly greater when on a shared placement (Kell & Owen, 2009). Multiple students on placement was noted as negatively impacting supervisory relationships (Martin et al., 2004; Patterson et al., 2017), team integration (Martin et al., 2004), student learning (Martin et al., 2004), space to accommodate students and direct patient contact (Bartholomai & Fitzgerald, 2007; Martin et al., 2004; McPake, 2019).

Educators

Level 1: Educators reported enjoying working with students in a team, found it professionally stimulating and preferred this model to 1:1 supervision (Covington et al., 2017).

Level 2a: Three or more students on placement accentuated the importance of teamwork and value of working towards a common goal (Bartholomai & Fitzgerald, 2007). An educator's focus may shift away from pastoral support to students' learning needs (Martin et al., 2004). Some educators reported no significant difference in the effect this model had on managing workload and participation in professional development, research and committee activities (Farrow et al., 2000).

The disadvantages of the >3 model included difficulty with peer working relationships or differences in competency levels (Martin et al., 2004; McPake, 2019; Miller et al., 2006), understanding and monitoring individual needs (Bartholomai &

Fitzgerald, 2007; Copley & Nelson, 2012; Farrow et al., 2000; Martin et al., 2004; Miller et al., 2006), building supervisory relationships (Copley & Nelson, 2012; Farrow et al., 2000; Martin et al., 2004) and time use if correcting documentation for multiple students (Copley & Nelson, 2012). Educators expressed experiencing more stress, having less control of their caseload, less knowledge of their clients and having to rely on accurate student handovers (Copley & Nelson, 2012). Successful implementation of this model requires educator training (Covington et al., 2017), clear structure (Miller et al., 2006; Nelson et al., 2010) and reduction of educator caseload prior to student arrival (Copley & Nelson, 2012; Martin et al., 2004).

Level 3: When specifically measured, there was no evidence to link student numbers with clinical or non-clinical time use (Bartholomai & Fitzgerald, 2007; Bourne et al., 2019).

Organisation

Level 2a: Areas noted were issues with lack of physical space and access to computers (Martin et al., 2004; Nelson et al., 2010; Reidlinger et al., 2017; Roberts et al., 2009b) and access to sufficient numbers of clients (Martin et al., 2004).

Off-site model of supervision

Students

Level 2a: Advantages included student perception of deep learning (Fieldhouse & Fedden, 2009) and the development of independence and autonomy (Dancza et al., 2013; Egan et al., 2021). Educators similarly believed students "learned substantially" from their experience (Kassam et al., 2013). Students perceive skill development in personal learning and reflection, organising work independently, managing time and resources effectively, negotiation skills and managing close working relationships (Dancza et al., 2013). Also noted was development in observation and assessment skills and constructing knowledge for themselves rather than acquiring information from an educator (Fieldhouse & Fedden, 2009). An off-site educator provided the opportunity for critical reflection and discussion separate from the internal politics and relationships of the agency (Egan et al., 2021)

A disadvantage of the off-site model was the absence of day-to-day support from a clinical educator (Dancza et al., 2013), contributing to feelings of being lost in an unfamiliar setting (Fieldhouse & Fedden, 2009). Compared with other models of supervision, significantly more students in the off-site model rated dissatisfaction with supervision and support (Cleak et al., 2016; Egan et al., 2021), overall engagement with learning activities (Cleak et al., 2016; Cleak et al., 2022), exposure to casework and counselling activities (Cleak et al., 2022) and understanding of how to use theory in practice (Dancza et al., 2013).

Educators

There was limited data on educator perspectives regarding the off-site model, although pharmacy educators positively regarded the model as providing students with unique learning opportunities (Kassam et al., 2013).

Shared model of supervision

Students

Level 2a: Where a student had multiple educators, benefits included a broad base of professional support, knowledge and viewpoints (Barrett et al., 2021; Coulton & Krimmer, 2005), peer support (Miller et al., 2006), less reliance on the availability of one educator (Coulton & Krimmer, 2005) and reduced perceived intensity of the supervisory relationship and personality clashes found in a 1:1 model (Nelson et al., 2010). Other reported benefits were greater exposure to clinical experiences and increased learning opportunities (Barrett et al., 2021; Coulton & Krimmer, 2005; Miller et al., 2006; Nelson et al., 2010). Whilst one study reported no statistically significant difference in students' perceived skill development between this and a 1:1 model (Farrow et al., 2000), other studies reported perceptions of skill development in teamworking skills (Copley & Nelson, 2012), problem-solving, effective clinical reasoning, reflection, communication, time management, independence (Nelson et al., 2010) and greater awareness of own learning style (Copley & Nelson, 2012; Nelson et al., 2010). Whilst educators perceived students experienced a greater number of clinical areas, this wasn't matched by student perception (Farrow et al., 2000). Maintaining confidentiality between student and educators were reported as difficult, as were differences in educators' opinion and direction (Barrett et al., 2021; Coulton & Krimmer, 2005).

Educators

Level 2a: Support from multiple educators assisted the management of student issues (Copley & Nelson, 2012; Coulton & Krimmer, 2005; Miller et al., 2006), and sharing of supervision responsibilities was less likely to create communication breakdown due to student–educator conflict (Farrow et al., 2000). Group student teaching and student peer support can save time and be less draining than in a 1:1 model (Copley & Nelson, 2012) and reduce educator burnout (Coulton & Krimmer, 2005). Exposure to other educators' practice can support development of own clinical and teaching skills (Copley & Nelson, 2012), can enable attendance at workshops/training whilst supervision is provided by the co-educator (Coulton & Krimmer, 2005) and makes supervision possible for part-time workers (Coulton & Krimmer, 2005). Problems can arise when educators become competitive, have differences of opinion or where students play educators against each other (Coulton & Krimmer, 2005). To make this model work there was a need for structure and

clear expectations between different educators (Nelson et al., 2010) and trust between all parties to maintain confidentiality (Coulton & Krimmer, 2005).

Comparing the supervision models

Fifteen of the 44 articles made statistical comparisons between models. There is some evidence to suggest that student ratio does not impact time use or productivity (Bhagwat et al., 2018; Bourne et al., 2019; Pabian et al., 2017; Roberts et al., 2009b), but overall evidence for this and other reported outcomes is mixed and not strong enough to draw conclusions in favour of any model (Table 4).

Table 4

Model Comparison Outcomes

Model comparison	Study	Kirkpatrick Level	Results
2:1 vs 1:1	Bhagwat et al. (2018)	4a	No impact on service delivery, time use due to increased student numbers
	Pabian et al. (2017)	4a	Clinical productivity higher in 2:1 model
2 or more students vs 1:1	Farrow et al. (2000)	1	No difference to level of student satisfaction
			1:1 model students tended to rate satisfaction with supervisory relationship and improvement in ability to receive feedback higher than group model
			1:1 model educators rated satisfaction with opportunities to observe students higher than group model
		2a	Students perceived no difference in number of OT roles and clinical areas of practice experienced, or perceived skill development
			Educators perceived students were exposed to a statistically significantly greater number of clinical areas than 1:1
			1:1 model educators tended to rate higher supervisory relationship, quality of contact with students and responsibility for evaluation
			1:1 model educators tended to perceive a greater degree of development in the student's ability to evaluate themselves
			No significant difference in educators' perceptions of degree of student skill development
			No significant differences between educators' ratings on ability to manage caseload, PDP, research and committee activities
2:1 PAL vs 1:1	Reidlinger et al. (2017)	2a	Students on PAL reported a good learning experience and satisfactory workload more frequently than 1:1

Model comparison	Study	Kirkpatrick Level	Results
		3	Less time by educators undertaking direct student supervision on PAL compared with 1:1 without spending a significantly greater time undertaking indirect student supervision or student-related administration
	Roberts et al. (2009b)	1	Students on PAL were more positive about their experience compared to 1:1
		3	One health service showed a trend of reduced and another an increase in supervision time per student hour
2:1 vs 2:1 PAL	Sevenhuysen et al. (2014)	1	Both educators and students were more satisfied with the traditional 2:1 model
		3	No significant difference between groups on student performance PAL provided some benefits to educator workload and student feedback
Multiple student–supervisor ratio	Barrett et al. (2021)	2a	For all models, students consistently rated satisfaction on quality of placement lower than educators
		2b	Significant association between supervision model and student agreement with statements about learning goals, knowledge and supervision compatible with independence. A higher proportion of students who had two educators indicated a neutral response or disagreed with these statements
	Kell & Owen (2009)	2a	Students' perceived "fear of failure" significantly greater when sharing placement with other students or having more than one assessor and are more likely to adopt superficial approaches to learning
	Cleak et al. (2016)	3	Students with the "long-arm supervision with an unqualified onsite facilitator" were less likely to engage regularly with learning activities compared with "long-arm supervision with a qualified facilitator" or 1:1 models
	Bourne et al. (2019)	4a	No evidence supervision model was related to clinical or non-clinical time use, nor patient activity or productivity
Highly structured vs semi-structured 12:1 model of supervision	Nadasan & Puckree (2001)	3	No difference in performance regardless of whether structured or semi-structured
Face-to-face vs video-conferencing supervision	Reese et al. (2009)	1	Students' satisfaction with videoconferencing similar to in-person format No differences between ratings of supervisory relationship, perceptions of supervision or counsellor self-efficacy between the two formats

Model comparison	Study	Kirkpatrick Level	Results
External vs onsite supervision	Golos & Tekuzener (2019)	2a	Statistically significant higher student satisfaction scores relating to placement setting and supervision for onsite supervision compared with external supervision No statistically significant differences in students' satisfaction with development of personal and professional skills between the two models
	Kassam et al. (2013)	2b	No statistically significant differences between non-pharmacy staff experiences of having students in "role-established" versus "role-emergent" facilities. Staff on role-emerging sites were slightly more familiar with the role of the student, how to refer residents and found students provided helpful services
	Cleak et al. (2022)	3	Students with external supervision were offered less direct social work practice activities and more community development and research than students with onsite supervision. 82% of students with external supervision received supervision in scheduled meeting times compared with 53% of students with onsite supervision

Approaches to supervision

Approaches to supervision are identified as the *processes* involved in the implementation of supervision, such as the deliberate and consciously chosen learning tools used to facilitate learning (Kadushin & Harkness, 2002) (see Appendix C).

Peer-assisted learning

The most commonly evaluated approach was peer-assisted learning, which is where students work together on shared tasks to help each other to learn and, in the process, learn themselves (Reidlinger et al., 2017). The literature indicates the following outcomes.

Students

Level 1: Students are less satisfied with peer-assisted learning (PAL) compared to the traditional 2:1 (Sevenhuysen et al., 2014).

Level 2a: Students reported no difficulty providing or receiving feedback from a peer, have a neutral to negative response to the value of PAL to contributing to their learning and, overall, perceive increased stress with this approach (Sevenhuysen et al., 2014). Whilst students placed higher value on observing and working directly with an educator than a peer (Sevenhuysen et al., 2015), they experienced increased learning due to the collaborative nature of this approach (Claessen, 2004), reported a good learning experience and satisfactory workload compared to a 1:1 model of supervision (Reidlinger et al., 2017) and whilst the structured nature of PAL created additional pressure, this "was probably a good thing" (Roberts et al., 2009b, p. 41).

Level 3: Measurement of student outcomes between PAL and traditional 2:1 models noted PAL students had increased time observing peers, engaged in more specific facilitated peer interactions and received more verbal and written feedback across the placement duration, with no statistically significant difference in student performance scores (Sevenhuysen et al., 2014).

Educators

Level 1: Educators reported less satisfaction with this approach and with workload balance than a traditional 2:1 model of supervision (Sevenhuysen et al., 2014).

Level 2a: This approach reduced educator burden, providing them with more "down time" to organise placement logistics (Sevenhuysen et al., 2015). Educators had a neutral response about their confidence in facilitating PAL strategies and whether their educational style and behaviours varied substantially between PAL and 2:1 placements (Sevenhuysen et al., 2014). Educators placed higher value on students observing a practice educator over peer observation and feedback on clinical skill development (Sevenhuysen et al., 2015). This approach requires sharing of good practice and preparation of educators, including PAL facilitation skills (Reidlinger et al., 2017). The structure of PAL can be beneficial to new educators (Sevenhuysen et al., 2015) but potentially too rigid for educators to integrate into their personal style of supervision (Sevenhuysen et al., 2014). Difficulty finding sufficient number of patients for students is also noted (Reidlinger et al., 2017).

Level 3: No measured significant statistical differences in educator workload overall were found between PAL and 2:1 model of supervision except in PAL, educators spent significantly less time on direct teaching and more time on non-student related quality assurance tasks (Sevenhuysen et al., 2014). Similarly, educators spent significantly less time on direct student supervision compared with a 1:1 model without significantly greater time undertaking indirect student supervision or student-related administration (Reidlinger et al., 2017). Educators highlighted increased time is needed for weekly feedback, completion of portfolio paperwork and ensuring students work well together (Reidlinger et al., 2017).

Discussion

The aim of this scoping review was to identify, organise and synthesise existing evidence about the supervision of allied health students whilst on practice placements. Studies varied in the methods employed and were typically of low to moderate methodological quality. Kirkpatrick Level 2a outcomes, which typically describe student or educator perceptions of the value of a model or approach to supervision, dominated. Whilst there is merit in understanding perceptions, they need to be considered alongside the purpose of a practice placement, which is student learning. When group and 1:1 models of supervision were compared, students placed a higher value on learning opportunities where they

directly observed and worked 1:1 alongside an educator (Nelson et al., 2010; Sevenhuysen et al., 2015). Students have also expressed concerns around the competitive presence of a peer (Alpine et al., 2019; Dawes & Lambert, 2010; McPake, 2019; O'Connor et al., 2012). However, students may not be accurate judges of when learning has occurred, particularly when the learning experience is challenging (Brown, 2014) and a student may hold a negative perception of the effectiveness of a model or approach. Learning outcomes should therefore be measured beyond student perceptions.

Changing the culture and organisation of health professional education in practice settings may be difficult. Educators may structure learning experiences based on personal experiences of learning and a general sense of what works (Brown, 2014, p. 23). The subjectivity of perceptions, coupled with the lack of rigorous approaches using validated measures, contributes to the reporting of mixed outcomes for each model. Whilst six studies compared the professional practice outcomes between different models of supervision at Kirkpatrick Level 3, the findings remain inconclusive (Cleak et al., 2016; Cleak et al., 2022; Nadasan & Puckree, 2001; Reidlinger et al., 2017; Roberts et al., 2009b; Sevenhuysen et al., 2014). Only three studies reported Kirkpatrick Level 4 outcomes relating to changes in service delivery (Bhagwat et al., 2018; Bourne et al., 2019; Pabian et al., 2017). Further studies collecting quantitative data on factors such as patient outcomes, student and educator time use, productivity and cost would provide clarity to inform the decision-making process of organisations and educators supervising students in their setting.

This review found the terms *models* and *approaches* were poorly defined and used interchangeably, often making the focus of research unclear. The most common example of the use of synonymous terms was the 2:1 model and PAL. There was lack of clarity as to whether the analysis was regarding the benefits, or otherwise, of having paired students or regarding the PAL activities the students undertake whilst together. Furthermore, PAL is commonly associated with the 2:1 model of supervision and referred to as a model in itself, but PAL principles can be implemented whenever there are two or more students on placement at the same time (Farrow et al., 2000; Moore et al., 2003; Reidlinger et al., 2017). PAL can therefore be considered an educational approach to facilitate learning rather than simply a model of supervision.

Strengths and limitations

One strength of this review is the application of Kirkpatrick (2016) levels of evaluation to categorise reported outcomes and to assist with data synthesis. Another strength is the involvement of key stakeholders, which is considered best practice for scoping reviews (Maggio et al., 2021; Tricco et al., 2016). This review undertook a consultation process to determine if the proposed definitions aligned with their use of student supervision across the varied allied health professions. Limitations include some models or approaches being missed through the search strategy and potential charting inaccuracies due to inconsistencies in terminology within the literature.

Conclusion

Supervision models and approaches have been poorly defined in the literature, with different terms being used interchangeably. This has contributed to the ongoing inconclusive evidence regarding the superiority of any one model or approach. This scoping review has, therefore, clarified and defined models of supervision to enable more meaningful future comparisons between models and to provide clarity to placement providers' decision making. The discourse regarding higher student ratio supervision models to increase student capacity has changed little since the 1980s. Whilst evidence is limited, this review identified some positive qualitative outcomes for both students and educators for shared supervision models despite the allegiance allied health holds to the single student model. Further rigorous investigation into the use of shared supervision in allied health, collecting data on indicators beyond perception, such as time use, cost and productivity, and patient outcomes is warranted.

Conflicts of interest and funding

The authors have no conflicts of interest or funding to declare.

References

Australian Health Practitioner Regulation Agency (AHPRA). (2012–2019). *Annual report archive*. https://www.ahpra.gov.au/Publications/Annual-reports/Annual-report-archive.aspx

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. *Journal of Allied Health*, *46*(4), 243–249.

Alpine, L. M., Caldas, F. T., & Barrett, E. M. (2019). Evaluation of a 2 to 1 peer placement supervision model by physiotherapy students and their educators. *Physiotherapy Theory & Practice*, *35*(8), 748–755. https://doi.org/10.1080/09593985.2018.1458168

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Baldry Currens, J. (2003). The 2:1 clinical placement model: Review. *Physiotherapy*, *89*(9), 540–554. https://doi.org/10.1016/S0031-9406(05)60180-0

Barrett, E. M., Belton, A., & Alpine, L. M. (2021). Supervision models in physiotherapy practice education: Student and practice educator evaluations. *Physiotherapy Theory and Practice*, *37*(11), 1185–1198. https://doi.org/10.1080/09593985.2019.1692393

Bartholomai, S., & Fitzgerald, C. (2007). The collaborative model of fieldwork education: Implementation of the model in a regional hospital rehabilitation setting. *Australian Occupational Therapy Journal*, *54*(Suppl. 1), S23–S30. https://doi.org/10.1111/j.1440-1630.2007.00702.x

Bhagwat, M., Hewetson, R., Jones, L., Hill, A., Nunn, J., Tosh, R., & Cahill, L. (2018). Comparison of paired and single clinical placement models: A time-use analysis. *International Journal of Language & Communication Disorders*, *53*(3), 468–479. https://doi.org/10.1111/1460-6984.12360

Boniface, G., Seymour, A., Polglase, T., Lawrie, C., & Clarke, M. (2012). Exploring the nature of peer and academic supervision on a role-emerging placement. *The British Journal of Occupational Therapy*, *75*(4), 196–201. https://doi.org/10.4276/030802212X13336366278211

Bourne, E., McAllister, L., Nagarajan, S., & Short, K. (2019). The effect of speech-language pathology students on clinician time use and activity. *International Journal of Speech-Language Pathology*, *21*(2), 163–174. https://doi.org/10.1080/17549507.2017.1416175

Bowles, K. A., Haines, T., Molloy, E., Maloney, S., Kent, F., Sevenhuysen, S., & Tai, J. (2014). *The costs and benefits of providing undergraduate student clinical placements for a health service organisation: A rapid review*. https://researchmgt.monash.edu/ws/portalfiles/portal/38827515/35430376.pdf

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian higher education: Final report*. Australia Department of Education, Employment and Workplace Relations. https://www.voced.edu.au/content/ngv%3A32134

Briffa, C., & Porter, J. (2013). A systematic review of the collaborative clinical education model to inform speech-language pathology practice. *International Journal of Speech-Language Pathology*, *15*(6), 564–574. https://doi.org/10.3109/17549507.2013.763290

Brown, P. C. (2014). *Make it stick: The science of successful learning*. The Belknap Press of Harvard University Press.

Claessen, J. (2004). A 2:1 clinical practicum, incorporating reciprocal peer coaching, clinical reasoning, and self-and-peer evaluation. *Journal of Speech-Language Pathology & Audiology*, *28*(4), 156–165. https://www.cjslpa.ca/files/2004_JSLPA_Vol_28/No_04_151-194/Claessen_JSLPA_2004.pdf

Cleak, H., Roulston, A., & Vreugdenhil, A. (2016). The inside story: A survey of social work students' supervision and learning opportunities on placement. *British Journal of Social Work*, *46*(7), 2033–2050. https://doi.org/10.1093/bjsw/bcv117

Cleak, H., Zuchowski, I., & Cleaver, M. (2022). On a wing and a prayer! An exploration of students' experiences of external supervision. *British Journal of Social Work*, *52*(1), 217–235. https://doi.org/10.1093/bjsw/bcaa230

Copley, J., & Nelson, A. (2012). Practice educator perspectives of multiple mentoring in diverse clinical settings. *The British Journal of Occupational Therapy*, *75*(10), 456–462. https://doi.org/10.4276/030802212X13496921049662

Coulton, P., & Krimmer, L. (2005). Co-supervision of social work students: A model for meeting the future needs of the profession. *Australian Social Work*, *58*(2), 154–166. https://doi.org/10.1111/j.1447-0748.2005.00200.x

Covington, K., Odom, C., Heflin, S., & Gwyer, J. (2017). Student team learning in practice (STEPs®): An integrated clinical education collaborative model. *Journal of Physical Therapy Education*, *31*(2), 18–29. https://doi.org/10.1097/00001416-201731020-00004

Dancza, K., Copley, J., Rodger, S., & Moran, M. (2016). The development of a theory-informed workbook as an additional resource for supporting occupational therapy students on role-emerging placements. *British Journal of Occupational Therapy*, *79*, 135–136. https://doi.org/10.1177/0308022615612806

Dancza, K., Warren, A., Copley, J., Rodger, S., Moran, M., McKay, E., & Taylor, A. (2013). Learning experiences on role-emerging placements: An exploration from the students' perspective. *Australian Occupational Therapy Journal*, *60*(6), 427–435. https://doi.org/10.1111/1440-1630.12079

Dawes, J., & Lambert, P. (2010). Practice educators' experiences of supervising two students on allied health practice-based placements. *Journal of Allied Health*, *39*(1), 20–27.

Department of Health and Human Services (DHHS). (2016). *The best practice clinical learning environment framework: Delivering quality clinical education for learners*. Victoria State Government. https://bpcletool.net.au/media/medialibrary/2016/09/BPCLE_Framework_Aug_2016.pdf

Department of Health and Human Services (DHHS). (2019). *Victorian allied health clinical supervision framework.* Victoria State Government. Retrieved April 5, 2020, from https://www2.health.vic.gov.au/health-workforce/allied-health-workforce/clinical-supervision-framework

Department of Health and Human Services (DHHS). (2023). *Standardised schedule of fees for clinical placements of students in Victorian public health services for 2021*. https://www2.health.vic.gov.au/health-workforce/education-and-training/student-placement-partnerships/fee-schedule-for-clinical-placement-in-public-health-services

Egan, R., David, C., & Williams, J. (2021). An off-site supervision model of field education practice: Innovating while remaining rigorous in a shifting field education context. *Australian Social Work*. Advance online publication. https://doi.org/10.1080/0312407X.2021.1898004

Farrow, S., Gaiptman, B., & Rudman, D. (2000). Exploration of a group model in fieldwork education. *Canadian Journal of Occupational Therapy*, *67*(4), 239–249. https://doi.org/10.1177/000841740006700406

Fieldhouse, J., & Fedden, T. (2009). Exploring the learning process on a role-emerging practice placement: A qualitative study. *The British Journal of Occupational Therapy*, *72*(7), 302–307. https://doi.org/10.1177/030802260907200705

Gallagher, M., & Cahill, M. (2008). Using the 2:1 model of practice education in an Irish setting. *Irish Journal of Occupational Therapy*, *36*(1), 21–26.

Gibson, S. J., Porter, J., Anderson, A., Bryce, A., Dart, J., Kellow, N., Meiklejohn, S., Volders, E., Young, A., & Palermo, C. (2019). Clinical educators' skills and qualities in allied health: A systematic review. *Medical Education*, *53*(5), 432–442. https://doi.org/10.1111/medu.13782

Golos, A., & Tekuzener, E. (2019). "Perceptions, expectations and satisfaction levels of occupational therapy students prior to and after practice placement and comparison of practice placement models". *BMC Medical Education*, *19*(1), 324. https://doi.org/10.1186/s12909-019-1762-0

Gordon-Pershey, M., & Walden, P. R. (2013). Supervisor and supervisee perceptions of an adult learning model of graduate student supervision. *Perspectives on Administration & Supervision*, *23*(1), 12–21. https://doi.org/10.1044/aas23.1.12

Jung, B., Martin, A., Graden, L., & Awrey, J. (1994). Fieldwork education: A shared supervision model. *Canadian Journal of Occupational Therapy*, *61*(1), 12–19. https://doi.org/10.1177/000841749406100105

Kadushin, A., & Harkness, D. (2002). *Supervision in social work* (4th ed.). Columbia University Press.

Kassam, R., Kwong, M., & Collins, J. B. (2013). A demonstration study comparing "role-emergent" versus "role-established" pharmacy clinical placement experiences in long-term care facilities. *BMC Medical Education*, *13*, 104. https://doi.org/10.1186/1472-6920-13-104

Kell, C., & Owen, G. (2009). Approaches to learning on placement: The students' perspective. *Physiotherapy Research International*, *14*(2), 105–115. https://doi.org/10.1002/pri.422

Kirkpatrick, J. D. (2016). *Kirkpatrick's four levels of training evaluation*. ATD Press.

Lekkas, P., Larsen, T., Kumar, S., Grimmer, K., Nyland, L., Chipchase, L., Jull, G., Buttrum, P., Carr, L., & Finch, J. (2007). No model of clinical education for physiotherapy students is superior to another: A systematic review. *Australian Journal of Physiotherapy*, *53*(1), 19–28. https://doi.org/10.1016/S0004-9514(07)70058-2

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *5*, Article 69. https://doi.org/10.1186/1748-5908-5-69

Maggio, L. A., Larsen, K., Thomas, A., Costello, J. A., & Artino, A. R. (2021). Scoping reviews in medical education: A scoping review. *Medical Education*, *55*(6), 689–700. https://doi.org/10.1111/medu.14431

Markowski, M., Bower, H., Essex, R., & Yearley, C. (2021). Peer learning and collaborative placement models in health care: A systematic review and qualitative synthesis of the literature. *Journal of Clinical Nursing*, *30*(11–12), 1519–1541. https://doi.org/10.1111/jocn.15661

Martin, M., Morris, J., Moore, A., Sadlo, G., & Crouch, V. (2004). Evaluating practice education models in occupational therapy: Comparing 1:1, 2:1 and 3:1 placements. *British Journal of Occupational Therapy*, *67*(5), 192–200. https://doi.org/10.1177/030802260406700502

McPake, M. (2019). Radiographers' and students' experiences of undergraduate radiotherapy practice placement in the United Kingdom. *Radiography*, *25*(3), 220–226. https://doi.org/10.1016/j.radi.2019.01.008

Miller, A., Pace, T., Brooks, D., & Mori, B. (2006). Physiotherapy internship: An alternative collaborative learning model. *Physiotherapy Canada*, *58*(2), 157–166. https://doi.org/10.3138/ptc.58.2.157

Moore, A., Morris, J., Crouch, V., & Martin, M. (2003). Evaluation of physiotherapy clinical educational models: Comparing 1:1, 2:1 and 3:1 placements. *Physiotherapy*, *89*(8), 489–501. https://doi.org/10.1016/s0031-9406(05)60007-7

Morris, J., & Stew, G. (2007). Collaborative reflection: How far do 2:1 models of learning in the practice setting promote peer reflection? *Reflective Practice*, *8*(3), 419–432. https://doi.org/10.1080/14623940701425220

Nadasan, T., & Puckree, T. (2001). Clinical education: A University of Durban-Westville case study. *South African Journal of Physiotherapy*, *57*(3), 28–31. https://doi.org/10.4102/sajp.v57i3.510

Nelson, A., Copley, J., & Salama, R. (2010). Occupational therapy students' perceptions of the multiple mentoring model of clinical supervision. *Focus on Health Professional Education*, *11*(2), 14–27. https://search.informit.org/doi/10.3316/informit.103600301809612

O'Connor, A., Cahill, M., & McKay, E. (2012). Revisiting 1:1 and 2:1 clinical placement models: Student and clinical educator perspectives. *Australian Occupational Therapy Journal*, *59*(4), 276. https://doi.org/10.1111/j.1440-1630.2012.01025.x

Olaussen, A., Reddy, P., Irvine, S., & Williams, B. (2016). Peer-assisted learning: Time for nomenclature clarification. *Medical Education Online*, *21*(1), Article 30974. https://doi.org/10.3402/meo.v21.30974

Pabian, P. S., Dyson, J., & Levine, C. (2017). Physical therapist productivity using a collaborative clinical education model within an acute care setting: A longitudinal study. *Journal of Physical Therapy Education*, *31*(2), 11–17. https://doi.org/10.1097/00001416-201731020-00003

Panos, P. T. (2005). A model for using videoconferencing technology to support international social work field practicum students. *International Social Work*, *48*(6), 834–841. https://doi.org/10.1177/0020872805057095

Patterson, F., Fleming, J., Marshall, K., & Ninness, N. (2017). Student perspectives of a student-led groups program model of professional practice education in a brain injury rehabilitation unit. *Australian Occupational Therapy Journal*, *64*(5), 391–399. https://doi.org/10.1111/1440-1630.12382

Peters, M., Godfrey, C., McInerney, P., Munn, Z., Tricco, A., & Khalil, H. (2020). Scoping reviews (2020 version). In E. Aromataris & Z. Munn (Eds.), *Joanna Briggs Institute manual for Evidence Synthesis*. https://doi.org/10.46658/JBIMES-20-12

Price, D., & Whiteside, M. (2016). Implementing the 2:1 student placement model in occupational therapy: Strategies for practice. *Australian Occupational Therapy Journal*, *63*(2), 123–129. https://doi.org/10.1111/1440-1630.12257

Reese, R. J., Aldarondo, F., Anderson, C. R., Lee, S. J., Miller, T. W., & Burton, D. (2009). Telehealth in clinical supervision: A comparison of supervision formats. *Journal of Telemedicine & Telecare*, *15*(7), 356–361. https://doi.org/10.1258/jtt.2009.090401

Reidlinger, D. P., Lawrence, J., Thomas, J. E., & Whelan, K. (2017). Peer-assisted learning and small-group teaching to improve practice placement quality and capacity in dietetics. *Nutrition & Dietetics*, *74*(4), 349–356. https://doi.org/10.1111/1747-0080.12293

Rindflesch, A. B., Dunfee, H. J., Cieslak, K. R., Eischen, S. L., Trenary, T., Calley, D. Q., & Heinle, D. K. (2009). Collaborative model of clinical education in physical and occupational therapy at the Mayo Clinic. *Journal of Allied Health*, *38*(3), 132–142.

Roberts, N., Brockington, S., Doyle, E., Pearce, L. M., Bowie, A. J., Simmance, N., Evans, S., & Crowe, T. C. (2009a). Innovative model for clinical education in dietetics. *Nutrition & Dietetics*, *66*(1), 33–38. https://doi.org/10.1111/j.1747-0080.2008.01315.x

Roberts, N., Brockington, S., Doyle, E., Pearce, L. M., Bowie, A. J., Simmance, N., Evans, S., & Crowe, T. C. (2009b). Pilot study of an innovative model for clinical education in dietetics. *Nutrition & Dietetics*, *66*(1), 39–46. https://doi.org/10.1111/j.1747-0080.2008.01316.x

Roberts, N., Hooper, B. R., Wood, W. H., & King, R. M. (2015). An international systematic mapping review of fieldwork education in occupational therapy. *Canadian Journal of Occupational Therapy*, *82*(2), 106–118. https://doi.org/10.1177/0008417414552187

Rodger, S., Webb, G., Devitt, L., Gilbert, J., Wrightson, P., & McMeeken, J. (2008a). Clinical education and practice placements in the allied health professions: An international perspective. *Journal of Allied Health*, *37*(1), 53–62. https://archive.u21health.org/sites/u21health.org/files/article%20journal%20of%20allied%20health%202008.pdf

Secomb, J. (2008). A systematic review of peer teaching and learning in clinical education. *Journal of Clinical Nursing*, *17*(6), 703–716. https://doi.org/10.1111/j.1365-2702.2007.01954.x

Sevenhuysen, S., Farlie, M. K., Keating, J. L., Haines, T. P., & Molloy, E. (2015). Physiotherapy students and clinical educators perceive several ways in which incorporating peer-assisted learning could improve clinical placements: A qualitative study. *Journal of Physiotherapy*, *61*(2), 87–92. https://doi.org/10.1016/j.jphys.2015.02.015

Sevenhuysen, S., Skinner, E. H., Farlie, M. K., Raitman, L., Nickson, W., Keating, J. L., Maloney, S., Molloy, E., & Haines, T. P. (2014). Educators and students prefer traditional clinical education to a peer-assisted learning model, despite similar student performance outcomes: A randomised trial. *Journal of Physiotherapy*, *60*(4), 209–216. https://doi.org/10.1016/j.jphys.2014.09.004

Sevenhuysen, S., Thorpe, J., Molloy, E., Keating, J., & Haines, T. (2017). Peer-assisted learning in education of allied health professional students in the clinical setting: A systematic review. *Journal of Allied Health*, *46*(1), 26–35.

Snodgrass, S. J., Ball, K., Rivett, D. A., Ashby, S. E., Johnston, C. L., Nguyen, K., & Russell, T. (2015). The electronically facilitated feedback initiative: Enhancing student feedback during clinical supervision using iPad technology. *Physiotherapy*, *101*, e1413–e1413. https://doi.org/10.1016/j.physio.2015.03.1366

Tiberius, R., & Gaiptman, B. (1985). The supervisor–student ratio: 1:1 versus 1:2. *Canadian Journal of Occupational Therapy*, *52*(4), 179–183. https://doi.org/10.1177/000841748505200403

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K., Colquhoun, H., Kastner, M., Levac, D., Ng, C., Sharpe, J. P., Wilson, K., Kenny, M., Warren, R., Wilson, C., Stelfox, H. T., & Straus, S. E. (2016). A scoping review on the conduct and reporting of scoping reviews. *BMC Medical Research Methodology*, *16*(1), Article 15. https://doi.org/10.1186/s12874-016-0116-4

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., . . . Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

World Federation of Occupational Therapists (WFOT). (2016). *Minimum standards for the education of occupational therapists: Revised 2016*. https://www.wfot.org/assets/resources/COPYRIGHTED-World-Federation-of-Occupational-Therapists-Minimum-Standards-for-the-Education-of-Occupational-Therapists-2016a.pdf

Zeira, A., & Schiff, M. (2010). Testing group supervision in fieldwork training for social work students. *Research on Social Work Practice*, *20*(4), 427–434. https://doi.org/10.1177/1049731509332882

Appendix A

Search Strategy

Criterion	Search Terms
Time period	2000 to 2022
Language	English
Participants Students	Student* OR undergraduate OR postgraduate OR Masters OR Entry-level OR professional entry OR novice OR learner
Participants Supervisors	placement educat* OR practice educator* OR clinical educat* OR clinical clerkship* OR clinical instructor* OR clinical supervis* OR supervisor* OR coach OR mentor* OR mentee* preceptor
Context	Clinical OR clinical education OR placement OR fieldwork OR Work integrated learning
Context Health Profession	allied health OR art therp* OR audiolog* OR biomedical science OR Chiropract* OR diagnostic imaging medical physics OR dietet* OR dieti* OR exercise physiolog* OR Medical laboratory science OR music therap* OR nuclear medicine OR music therap* OR occupational therap* OR oral health OR orthoptic* OR orthotics and prosthetics OR osteopath* OR pharmac* OR physiotherap* OR physical therap* OR podiatr* OR psycholog* OR clinical psychology OR radiation oncology medical physics OR radiation therap* OR radiograph* OR social work* OR Sonograph* OR speech therap* OR speech language therap* OR speech patholog* OR speech language patholog*
Concept Models and approaches to supervision	1:1 OR 2:1 OR PAL OR Pair OR peer learning OR Long-arm OR Role emerging OR peer* OR collaborative OR co-operative OR model OR practice education model OR group supervision

Criterion	Search Terms
Concept Outcomes	Outcomes OR Costs OR experience OR Skill development OR perception* OR Learning education

Appendix B

Inclusion/Exclusion Criteria

Criterion	Inclusion	Exclusion
Time period	2000 to 2022	Studies before 2000
Language	English	Non-English studies
Type of articles	Original research, editorial or opinion articles	Review articles
Participants Students	Pre-registration undergraduate and master's students	Registered clinicians
Participants Educators	Student placement educator, practice educator, student clinical supervisor	Supervisors of clinical colleagues
Context Setting	Any setting providing placement experience (e.g., hospital, community, school, community organisations, etc.)	None
Context Health profession	Art therapy, audiology, biomedical science, chiropractic, diagnostic imaging medical physics, dietetics, exercise physiology, medical laboratory science, music therapy, nuclear medicine, occupational therapy, oral health (not dentistry), orthoptics, orthotics and prosthetics, osteopathy, pharmacy, physiotherapy, podiatry, psychology, radiation oncology medical physics, radiation therapy, radiography, social work, sonography, speech pathology	Medicine, nursing, allied health assistant or profession not listed in inclusion
Concept Models and approaches to supervision	Included clear description and/or implementation of a supervision model or approach	Focus on simulated placement, interprofessional education, the functioning of student-led clinics, supervision training, skills and qualities of clinical educators

Appendix C

Most Frequently Described Approaches to Supervision

Approach	Function of Supervision	Reported Outcome for Students	Reported Outcome for Supervisors
Timetable	Administrative	Perception this enables students to gain an understanding of how a supervisor manages their clinical and admin duties (Bartholomai & Fitzgerald, 2007) Perception this develops student self-management skills around planning learning and determining when to see patients (Bartholomai & Fitzgerald, 2007; Dancza et al., 2016)	Enabled supervisors to allot supervision times (Bartholomai & Fitzgerald, 2007)
Orientation folders/record books	Administrative	Provided adequate guidelines for clinical education and enabled students to easily record their clinical hours (Nadasan & Puckree, 2001)	
Adult experiential learning model	Educational	Can be seen as unnatural and can limit learning as more guidance is needed, which can lead to stress (Gordon-Pershey & Walden, 2013)	Enabled supervisor professional growth and positive change to supervising style (Gordon-Pershey & Walden, 2013)
Group supervision	Educational	Facilitates peer learning (Bartholomai & Fitzgerald, 2007) Students had higher scores for their perception of learning the intervention process but no significant difference in evaluations of interventions with clients between group and individual supervision or in students' internalisation of professional values, or evaluation of their field instructors (Zeira & Schiff, 2010) Students rated evaluation of their field instructor, specifically content of supervision and of relationships with their supervisor significantly lower than individual supervision (Zeira & Schiff, 2010)	Simplified the process of monitoring student progress and competency (Bartholomai & Fitzgerald, 2007) Supervisors had to monitor and guide novice peers (Bartholomai & Fitzgerald, 2007) Not cost effective due to additional costs of training supervisors (Zeira & Schiff, 2010)

Approach	Function of Supervision	Reported Outcome for Students	Reported Outcome for Supervisors
Structured PAL placement	Educational	Students reported this created an additional but necessary pressure (Roberts et al., 2009b)	Provided more "downtime" for supervisors and helped with logistics of placement organisation and can help new supervisors (Sevenhuysen et al., 2015) Some felt challenged by the frequency of the prescribed PAL activities (Sevenhuysen et al., 2015) Doesn't allow for complexity of placement and preferred "hands-on learning" over PAL activities (Sevenhuysen et al., 2015)
Peer critique/ feedback	Educational	Encourages student participation and added to the learning experience (Claessen, 2004) Encourages self-directed learning (Martin et al., 2004) Gives students greater opportunity to enhance their clinical skills (Claessen, 2004; Covington et al., 2017) Less reliant on obtaining answers from the supervisor, which students found empowering (Claessen, 2004) Students report liking peer feedback as peers are more likely to give positive and negative feedback and educators more likely to give negative feedback (Reidlinger et al., 2017) Supervisors reported this encourages students to become accountable, reflective and develop problem-solving skills (Reidlinger et al., 2017) Become confident talking to patients more quickly (Roberts et al., 2009b) Quieter students can place higher expectations onto other students (Claessen, 2004) More time consuming feedback sessions (Claessen, 2004)	Resulted in more time consuming feedback sessions (Claessen, 2004) Supervisors feel uncomfortable relying on peer feedback, especially with weaker students (Roberts et al., 2009b) Perceive that peer observation and feedback cannot replace observing clinical supervisor, which is needed to develop clinical skills and skills in giving feedback—higher value given to this than peer feedback (Sevenhuysen et al., 2015)
Learning contracts	Educational	Students clear on what supervisors expected of them (Coulton & Krimmer, 2005)	
Intervention planning sheets	Educational	Useful communication tool to help articulate clinical reasoning in a structured way (Nelson et al., 2010)	

Approach	Function of Supervision	Reported Outcome for Students	Reported Outcome for Supervisors
Case studies	Educational	Students found case studies interesting, and they improved students' ability to integrate information, allowed for peer evaluation and promoted learning (Nadasan & Puckree, 2001) Working on case studies could be time consuming (Nadasan & Puckree, 2001) Greater exposure to greater depth of cases (Reidlinger et al., 2017)	
Individual to supervisor only presentations	Educational	Less intimidating and able to perform better and enabled individual student problems to be identified and remediated (Nadasan & Puckree, 2001)	
Individual to group of students and supervisors	Educational	Informative, allowed for communication, good learning experience and good follow up to the case study, allowing for constructive criticism, advice and guidance (Nadasan & Puckree, 2001) Helps to develop case presentation skills (Reidlinger et al., 2017)	
Students in pairs presenting to other students and supervisor/ small group presentations	Educational	Encourages team work, peer socialisation and learning and improved attention given to patients (Nadasan & Puckree, 2001) Helped transition from campus-based to practice-based learning (Reidlinger et al., 2017)	
Reflective tasks	Educational and supportive	Provides support to students working in pairs … promoted independent thinking and deep learning (Dancza et al., 2013) Improved clinical practice, learning and clinical problem solving (Gordon-Pershey & Walden, 2013) Helps students evaluate learning experiences and identify any gaps (Nelson et al., 2010)	Supervisors feel ill-prepared to facilitate reflective practice and lack confidence in their ability to promote reflective practice in their learners (Morris & Stew, 2007)
Workbook	Educational and supportive	Provides supervision without the supervisor (Dancza et al., 2016)	

Approach	Function of Supervision	Reported Outcome for Students	Reported Outcome for Supervisors
Video conferencing	Educational and supportive	Reduces sense of isolation for students on international placements, enabled them to create their own support network with other students in different countries, creating greater "bandwidth" where supervisors could observe more non-verbal behaviours than when on the phone (Panos, 2005) Trainees rated satisfaction with this mode of supervision similar to face-to-face format, same for supervisory relationship and still enabled students to develop clinical skills (Reese et al., 2009) Can be more rigid and structured with some emotional elements of supervision lost (Reese et al., 2009) Students had to buy computers to enable this approach to happen and experienced software crashes (Panos, 2005) Needed reliable technology (Reese et al., 2009)	Enabled 2 supervisors to clarify discrepancies in advice given to students (Panos, 2005)
Electronic feedback (iPad)	Educational	Helped facilitate reflection and improve performance (Snodgrass et al., 2015)	Effective means for keeping regular and accurate documentation of student improvement, which helped with formal assessment of student performance (Snodgrass et al., 2015) Can spend too long navigating technology and therefore more time needed to provide feedback and sometimes replicated feedback given verbally (Snodgrass et al., 2015) Not always possible to use in a hospital setting due to infection control issues (Snodgrass et al., 2015)
Student room	Supportive	Promotes peer learning and allows space and privacy to work (Bartholomai & Fitzgerald, 2007)	